

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 r 1
Edition : 03.06.91
Replaces : 3.5.91
Test oil : ISO-4113

Combination no. : 0 402 646 939

Injection pump
Pump designation : PE6P120A320LS7836
EP type number : 0 412 626 840
Governor
Governor design. : RQV300...950PA797-31
Governor no. : 0 421 813 922

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.60

Del.quantity cm3/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.8

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50

2nd speed rpm : 617

travel mm : 5.00...5.50

3rd speed rpm : 780

travel mm : 6.10...6.60

4th speed rpm : 1009

travel mm : 8.30...8.80

5th speed rpm : 1092

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 850
Del.quantity : 182.0...184.0
1000 : (179.0...187.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:

1st rack travel in: 12.10
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:

Speed rpm : 200
Minimum rack travel: 7.30
Speed rpm : 300
Rack travel in mm : 5.20...5.80

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : -
2nd speed rpm : 950
Rack travel in m: 13.10...13.30
3rd speed rpm : 800
Rack travel in m: 13.10...13.30

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 12.40...12.50

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 10.20...10.40
2nd pressure hPa : 500
Rack travel in m: 11.60...11.80
3rd pressure hPa : 1000

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Rack travel in m: 12.60...12.80
4th pressure hPa : 1150
Rack travel in m: 12.90...13.10
5th pressure hPa : -
Rack travel in m: 9.50...9.80

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 950
Del.quantity cm3/ : 203.0...206.0
1000 s: (200.0...209.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 202.0...206.0
1000 s: (199.0...209.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 122.0...124.0
1000 s: (119.0...127.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.10
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 L2
 Edition : 27.05.91
 Replaces : 22.3.91
 Test oil : ISO-4113
 Combination no. : 0 402 646 941
 Injection pump
 Pump designation : PE6P120A320RS7218Z
 EP type number : 0 412 626 847
 Governor
 Governor design. : RQ250/1000PA936-1
 Governor no. : 0 421 801 508

Customer-spec. information
 Customer : DAF

Engine : WS 222 G

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness : 8.00X2.50X1000
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40
 : (5.25...5.45)
 Rack travel in mm : 13.10...14.10

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Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
 & maximum rack tra: 13.1...14.1
 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...6.8

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 196.0...198.0

1000 : (193.0...201.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 12.60
Speed rpm : 1035...1050
2nd rack travel in: 4.00
Speed rpm : 1125...1155
4th rack travel in: 1250
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 250
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 310...350

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 14.60...14.70
2nd speed rpm : 990
Rack travel in m: 14.50...14.70

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.60...13.70

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 12.30...12.50
2nd pressure hPa : 390
Rack travel in m: 13.30...13.40
3rd pressure hPa : 310
Rack travel in m: 12.70...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600
Del. quantity cm³/ : 161.0...163.0
1000 s: (158.0...166.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60
Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.90...5.10

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,1 d
Edition : 27.05.91
Replaces : 26.4.91
Test oil : ISO-4113

Combination no. : 0 402 646 942

Injection pump
Pump designation : PE6P120A320LS7837
EP type number : 0 412 626 842
Governor
Governor design. : RQ300/1050PA993
Governor no. : 0 421 801 581

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm³/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 13.90
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:
Speed rpm : 200
Minimum rack travel: 7.70
Speed rpm : 300
Rack travel in mm : 5.60...6.20
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.50...15.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600

1st pressure hPa : 200
Rack travel in m: 10.00...10.20
2nd pressure hPa : 500
Rack travel in m: 13.50...13.70
3rd pressure hPa : 1250
Rack travel in m: 14.80...15.00 *
4th pressure hPa : 1400
Rack travel in m: 15.30...15.50
5th pressure hPa : -
Rack travel in m: 9.30...9.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800
Speed rpm : 1050
Del.quantity cm3/ : 235.0...238.0
1000 s: (232.0...241.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1800
Speed rpm : 800
Del.quantity cm3/ : 248.0...252.0
1000 s: (245.0...255.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 135.0...137.0
1000 s: (132.0...140.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

Note remarks

1st version
Speed rpm : 600
Aneroid pressure h: 900
Del.quantity : 214.0...216.0
1000 : (211.0...219.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:
1st rack travel in: 13.80
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 200
Minimum rack trave: 7.30
Speed rpm : 350
Rack travel in mm : 5.10...5.70

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.90...14.10

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 11.00...11.20
2nd pressure hPa : 550
Rack travel in m: 13.10...13.30
3rd pressure hPa : 1100
Rack travel in m: 14.10...14.30
4th pressure hPa : 1200
Rack travel in m: 14.50...14.70
5th pressure hPa : -
Rack travel in m: 9.50...9.80

START CUT-OUT

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Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1350
Speed rpm : 950
Del.quantity cm3/ : 241.0...243.0
1000 s: (238.0...246.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1350
Speed rpm : 800
Del.quantity cm3/ : 237.0...241.0
1000 s: (234.0...244.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1350
Speed rpm : 950
Del.quantity cm3/ : 200.0...202.0 *
1000 s: (197.0...205.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.80
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 205.0...225.0
1000 s: (201.0...229.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 j 2
 Edition : 03.06.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 844A
 Injection pump
 Pump designation : PE8P120A320LS7816
 EP type number : 0 412 628 829
 Governor
 Governor design. : RQ300/1050PA717-2
 Governor no. : 0 421 801 439

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.10...13.30

Del.quantity cm3/ : 22.9...23.2

100 s: (22.6...23.5)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.5

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 229.0...232.0

1000 : (226.0...235.0)

Spread cm3 : 4.00

1000 : (7.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.90
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 5.90...6.50
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.40
2nd speed rpm : 1050
Rack travel in m: 13.90...14.60
3rd speed rpm : 850
Rack travel in m: 14.50...14.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 13.10...13.30

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.30...11.50
2nd pressure hPa : 550
Rack travel in m: 12.40...12.60
3rd pressure hPa : 950
Rack travel in m: 13.30...13.50
4th pressure hPa : 1250
Rack travel in m: 13.10...14.30
5th pressure hPa : -
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600

A10

Speed rpm : 1050
Del.quantity cm3/ : 241.0...245.0
1000 s: (238.0...248.0)
Spread cm3 : 7.00
1000 s: (10.0)
Aneroid pressure h: 1600
Speed rpm : 850
Del.quantity cm3/ : 254.0...258.0
1000 s: (251.0...261.0)
Spread cm3 : 7.00
1000 s: (10.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm3 : 7.00
1000 s: (10.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.90
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 j 3
 Edition : 03.06.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 844
 Injection pump
 Pump designation : PE8P120A320LS7816
 EP type number : 0 412 628 829
 Governor
 Governor design. : RQ300/1050PA717-2
 Governor no. : 0 421 801 439

Cust. part no. : T3

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600
 Rack travel in mm : 13.10...13.30
 Del.quantity cm3/ : 22.5...22.8
 100 s: (22.2...23.1)
 Spread cm3 : 0.4
 100 s: (0.7)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.5
 Del.quantity cm3/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm3 : 0.5
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 800
 Del.quantity : 225.0...228.0
 1000 : (222.0...231.0)
 Spread cm3 : 4.00
 1000 : (7.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.90
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 5.90...6.50
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.40
2nd speed rpm : 1050
Rack travel in m: 13.90...14.60
3rd speed rpm : 850
Rack travel in m: 14.50...14.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 13.10...13.30

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.30...11.50
2nd pressure hPa : 550
Rack travel in m: 12.40...12.60
3rd pressure hPa : 950
Rack travel in m: 13.30...13.50
4th pressure hPa : 1250
Rack travel in m: 14.10...14.30
5th pressure hPa : -
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm3/ : 243.0...247.0
1000 s: (240.0...250.0)
Spread cm3 : 7.00
1000 s: (10.0)
Aneroid pressure h: 1600
Speed rpm : 850
Del.quantity cm3/ : 261.0...265.0
1000 s: (258.0...268.0)
Spread cm3 : 7.00
1000 s: (10.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm3 : 7.00
1000 s: (10.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.90
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 k 2
 Edition : 03.06.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 845A
 Injection pump
 Pump designation : PE8P120A320LS7816
 EP type number : 0 412 628 829
 Governor
 Governor design. : RQV300...1050PA797-5
 Governor no. : 0 421 813 702

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600
 Rack travel in mm : 13.10...13.30
 Del.quantity cm3/ : 22.9...23.2
 100 s: (22.6...23.5)
 Spread cm3 : 0.4
 100 s: (0.7)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.5
 Del.quantity cm3/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm3 : 0.5
 100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.20...1.40
 2nd speed rpm : 800
 travel mm : 5.80...6.10
 3rd speed rpm : 1120
 travel mm : 8.20...8.80
 4th speed rpm : 1180
 travel mm : 9.60...10.40

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1100
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 800

Del.quantity : 229.0...232.0
1000 : (226.0...235.0)
Spread cm3 : 4.00
1000 : (7.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 12.90
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 82...90

Testing:
Speed rpm : 200
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 5.90...6.50

CONSTANT REGULATION

Speed rpm : 300...500

TORQUE CONTROL

Dimension a mm : 1.30
2nd speed rpm : 1050
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.50...14.80

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 13.10...13.30

Measurement
Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.30...11.50
2nd pressure hPa : 550
Rack travel in m: 12.40...12.60
3rd pressure hPa : 950
Rack travel in m: 13.30...13.50
4th pressure hPa : 1200
Rack travel in m: 14.10...14.30

5th pressure hPa : -
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm3/ : 241.0...245.0
1000 s: (238.0...248.0)
Spread cm3 : 7.00
1000 s: (10.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm3/ : 254.0...258.0
1000 s: (251.0...261.0)
Spread cm3 : 7.00
1000 s: (10.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm3 : 7.00
1000 s: (10.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.90
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks: :

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 k 3
Edition : 03.06.91
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 845A3

Injection pump
Pump designation : PE8P120A320LS7816
EP type number : 0 412 628 829
Governor
Governor design. : RGV300...1050PA797-5
Governor no. : 0 421 813 702

Cust. part no. : T3

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 LA

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.10...13.30

Del.quantity cm3/ : 22.5...22.8

100 s: (22.2...23.1)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.5

100 s: (0.8)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.20...1.40

2nd speed rpm : 800

travel mm : 5.80...6.10

3rd speed rpm : 1120

travel mm : 8.20...8.80

4th speed rpm : 1180

travel mm : 9.60...10.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800
Del.quantity : 225.0...228.0
1000 : (222.0...231.0)
Spread cm3 : 4.00
1000 : (7.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 12.90
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 82...90

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.90...6.50

CONSTANT REGULATION
Speed rpm : 300...500

TORQUE CONTROL
Dimension a mm : 1.30
2nd speed rpm : 1050
Rack travel in m: 13.90...14.10
3rd speed rpm : 800
Rack travel in m: 14.50...14.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 13.10...13.30

Measurement
Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.30...11.50
2nd pressure hPa : 550
Rack travel in m: 12.40...12.60
3rd pressure hPa : 950
Rack travel in m: 13.30...13.50
4th pressure hPa : 1200

Rack travel in m: 14.10...14.30
5th pressure hPa : -
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm3/ : 243.0...247.0
1000 s: (240.0...250.0)
Spread cm3 : 7.00
1000 s: (10.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm3/ : 261.0...265.0
1000 s: (258.0...268.0)
Spread cm3 : 7.00
1000 s: (10.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm3 : 7.00
1000 s: (10.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack travel: 12.90
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 i 1
 Edition : 27.05.91
 Replaces : 26.4.91
 Test oil : ISO-4113
 Combination no. : 0 402 648 846
 Injection pump
 Pump designation : PE8P120A320LS7815
 EP type number : 0 412 628 827
 Governor
 Governor design. : RQV350...1050PA870-3
 Governor no. : 0 421 813 700

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM442LA

1st version kW : 368.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 15.10...15.20

Del.quantity cm3/ : 25.8...26.0

100 s: (25.5...26.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...5.6

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.90...2.10

2nd speed rpm : 700
 travel mm : 4.10...4.50

3rd speed rpm : 1100
 travel mm : 7.60...8.00

4th speed rpm : 1200
 travel mm : 9.50...9.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050
Aneroid pressure h: 1500
Del.quantity : 258.0...260.0
1000 : (255.0...263.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 14.10
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 62...70

Testing:
Speed rpm : 200
Minimum rack trave: 7.60
Speed rpm : 350
Rack travel in mm : 5.00...5.60

CONSTANT REGULATION
Speed rpm : 350...600

TORQUE CONTROL
Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 15.10...15.20
2nd speed rpm : 1000
Rack travel in m: 15.30...15.50
3rd speed rpm : 800
Rack travel in m: 15.40...15.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.40...14.60

Measurement
Speed 1/min : 600

1st pressure hPa : 330
Rack travel in m: 10.10...10.30
2nd pressure hPa : 600

Rack travel in m: 13.00...13.20
3rd pressure hPa : 1260
Rack travel in m: 14.60...14.80
4th pressure hPa : 1400
Rack travel in m: 15.00...15.20
5th pressure hPa : -
Rack travel in m: 8.80...9.10

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm3/ : 239.0...242.0
1000 s: (236.0...245.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm3/ : 266.0...270.0
1000 s: (263.0...273.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 1050
Del.quantity cm3/ : 194.0...196.0 *
1000 s: (191.0...199.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 144.0...146.0
1000 s: (141.0...149.0)
Spread cm3 : 8.00
1000 s: (-)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.10
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 260.0...280.0
1000 s: (256.0...284.0)

Remarks:
:

* = Set at reduced-delivery stop.



Note remarks

Combination no. : 0 402 648 851

Customer-spec. information
Customer : MAN

1st version kW : 500.0
Rated speed : 2300

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Test pressure, bar: 25...27

Phasing : 0-45-90-135-180-225-270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

1st speed rpm : 1150

Rack travel in mm : 13.80...13.90

Del.quantity cm3/ : 30.7...30.9

100 s: (30.4...31.2)

Spread cm³ : 0.5

100 s: (0.9)

```
2nd speed      rpm : 500
Rack travel in mm : 8.90...9.10
Del.quantity cm3/ : 14.9...15.1
               100 s: (14.6...15.4)
```

Spread cm3 : -
100 s: (-)

```

3rd speed      rpm      : 250
Rack travel in mm : 7.30...7.50
Del.quantity   cm3/     : 5.2...6.0 *
                100 s: (-)

```

(B) Setting of injection pump
with governor

```

1st speed      rpm : 250
  travel mm    : 1.40...1.60
2nd speed      rpm : 450
  travel mm    : 3.40...4.00
3rd speed      rpm : 850
  travel mm    : 6.30...6.90
4th speed      rpm : 1150
  travel mm    : 9.40...9.60
5th speed      rpm : 1450
  travel mm    : 13.00...14.00

```

Control-Lever position
Degree: -1

Speed rpm : 1240
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
 Aneroid pressure h: 1300
 Del.quantity : 307.0...309.0
 1000 : (304.0...312.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Control lever
 position degrees: 118...126

Testing:

1st rack travel in: 12.80
 Speed rpm : 1190...1200
 2nd rack travel in: 4.00
 Speed rpm : 1295...1325
 4th rack travel in: 1450
 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
 position degrees: 80...88

Testing:

Speed rpm : 100
 Minimum rack trave: 8.90
 Speed rpm : 250
 Rack travel in mm : 7.30...7.50
 Rack travel in mm : 2.00
 Speed rpm : 430...490

Aneroid/Altitude Compensator Test

1st version

Setting
 Speed rpm : 500
 Pressure hPa : 1300
 Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 8.90...9.10
 2nd pressure hPa : 100
 Rack travel in m: 9.30...9.40
 3rd pressure hPa : 470
 Rack travel in m: 12.30...12.60

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
 Speed rpm : 500
 Del.quantity cm³/ : 149.0...151.0
 1000 s: (146.0...154.0)

BREAKAWAY

1st version

1mm rack travel less than
 full load rack tr: 12.80
 Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
 Del.quantity cm³/ : 100.0...120.0 *
 1000 s: (-)

Speed rpm : 100
 Del.quantity cm³/ : 0 **
 1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 500
 Rack travel in mm : < 7.00
 Del.quantity cm³/ : 0 **
 1000 s: (-)

2nd version

Speed rpm : 500
 Rack travel in mm : < 7.50
 Del.quantity cm³/ : < 50.0 **
 1000 s: (-)

3rd version

Speed rpm : 500
 Rack travel in mm : 8.30...8.50
 Del.quantity cm³/ : 125.0...**
 1000 s: (-)

LOW IDLE

Speed rpm : 250
 Rack travel in mm : 7.30...7.50
 Del.quantity cm³/ : 52.0...60.0
 1000 s: (-)

Remarks:

: MAN-NR. 2-7944

* applies to cylinders 2, 3, 4 and 8

** applies for cylinders 1, 5, 6, and 7

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 14,0 h7
 Edition : 27.05.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 869
 Injection pump
 Pump designation : PE8P120A920/4LS7125
 EP type number : 0 412 628 833
 Governor
 Governor design. : RQV200...1050PA736-7
 Governor no. : 0 421 813 771

Customer-spec. information
 Customer : SCANIA

Engine : DS14

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness : 6.00X1.50X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5-
 6- 8

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 225.0

Rack travel in mm : 5.0...5.6

Del.quantity cm3/ : 1.6...2.0

100 s: (-)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
 travel mm : 1.20...1.60

2nd speed rpm : 350
 travel mm : 2.30...2.90

3rd speed rpm : 650
 travel mm : 4.00...4.60

4th speed rpm : 1095
 travel mm : 8.20...8.40

5th speed rpm : 1215
 travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 214.0...216.0

1000 : (211.0...219.0)

Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 95...103

Testing:
1st rack travel in: 12.50
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 40...48

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 225
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 380...440

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.50...13.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.20...11.60
2nd pressure hPa : 365
Rack travel in m: 12.80...12.90
3rd pressure hPa : 215
Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1050
Del.quantity cm³/ : 208.0...216.0
1000 s: (206.0...218.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 158.0...162.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...290.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.90...5.10

Remarks:

:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on November 29, 1990

Start of delivery - engine: 16° before
TDC

Engine firing sequence: 1-5-4-2-6-3-7-8

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 v 2
Edition : 27.05.91
Replaces : 26.4.91
Test oil : ISO-4113

Combination no. : 0 402 648 899

Injection pump
Pump designation : PE8P120A320LS7839
EP type number : 0 412 628 849
Governor
Governor design. : RQ300/950PA971-5
Governor no. : 0 421 801 559

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 15.10...15.30

Del. quantity cm3/ : 25.6...25.8

100 s: (25.3...26.1)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.8

Del. quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1050

Del. quantity : 256.0...258.0

1000 : (253.0...261.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.20

Speed rpm : 990...1005

2nd rack travel in: 4.00

Speed rpm : 1075...1105

4th rack travel in: 1150

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.5

Testing:

Speed rpm : 200

Minimum rack travel: 6.80

Speed rpm : 300

Rack travel in mm : 5.20...5.80

Rack travel in mm : 2.00

Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : -

2nd speed rpm : 950

Rack travel in m: 16.20...16.40

3rd speed rpm : 800

Rack travel in m: 16.20...16.40

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 1050

Rack travel mm : 15.10...15.30

Measurement

Speed 1/min : 600

1st pressure hPa : 350

Rack travel in m: 10.20...10.40

2nd pressure hPa : 800

Rack travel in m: 13.90...14.10

3rd pressure hPa : 1300

Rack travel in m: 15.30...15.50

4th pressure hPa : 1600

Rack travel in m: 15.90...16.10

5th pressure hPa : -

Rack travel in m: 9.40...9.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1900

Speed rpm : 950

Del.quantity cm3/ : 279.0...282.0

1000 s: (276.0...285.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 136.0...138.0

1000 s: (133.0...141.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 15.20

Speed rpm : 990...1005

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 v
Edition : 27.05.91
Replaces : 24.4.91
Test oil : ISO-4113

Combination no. : 0 402 648 902

Injection pump
Pump designation : PE8P120A320LS7839
EP type number : 0 412 628 849
Governor
Governor design. : RQ300/1050PA972-5
Governor no. : 0 421 801 564

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 15.10...15.30

Del.quantity cm3/ : 25.6...25.8

100 s: (25.3...26.1)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1050

Del.quantity : 256.0...258.0

1000 : (253.0...261.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.50
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.20...6.80
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 15.50...15.70
3rd speed rpm : 800
Rack travel in m: 15.70...15.90

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 100
Pressure hPa : 1050
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 9.70...9.90
2nd pressure hPa : 800
Rack travel in m: 13.40...13.60
3rd pressure hPa : 1300
Rack travel in m: 14.80...15.00
4th pressure hPa : 1600
Rack travel in m: 15.40...15.60
5th pressure hPa : -
Rack travel in m: 8.90...9.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1900
Speed rpm : 1050

Del.quantity cm3/ : 271.0...274.0
1000 s: (268.0...277.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1900
Speed rpm : 800
Del.quantity cm3/ : 276.0...280.0
1000 s: (273.0...283.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.50
Speed rpm : 1090...1105

Remarks:

:

Note remarks

1st version
Speed rpm : 600
Aneroid pressure h: 1050
Del.quantity : 256.0...258.0
1000 : (253.0...261.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 15.20
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 82...90

Testing:
Speed rpm : 200
Minimum rack travel: 6.80
Speed rpm : 300
Rack travel in mm : 5.20...5.80

CONSTANT REGULATION
Speed rpm : 300...500

TORQUE CONTROL
Dimension a mm : -
2nd speed rpm : 950
Rack travel in m: 16.20...16.40
3rd speed rpm : 800
Rack travel in m: 16.20...16.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1050
Rack travel mm : 15.10...15.30

Measurement
Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 10.20...10.40
2nd pressure hPa : 800
Rack travel in m: 13.90...14.10

3rd pressure hPa : 1300
Rack travel in m: 15.30...15.50
4th pressure hPa : 1600
Rack travel in m: 15.90...16.10
5th pressure hPa : -
Rack travel in m: 9.40...9.70

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1900
Speed rpm : 950
Del.quantity cm3/ : 279.0...282.0
1000 s: (276.0...285.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1900
Speed rpm : 800

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 15.20
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 275.0...295.0
1000 s: (271.0...299.0)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 v 3
 Edition : 03.06.91
 Replaces : 28.3.91
 Test oil : ISO-4113
 Combination no. : 0 402 648 911
 Injection pump
 Pump designation : PE8P120A320LS7839
 EP type number : 0 412 628 849
 Governor
 Governor design. : RQV300...1050PA797-27
 Governor no. : 0 421 813 916

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.60...14.80

Del.quantity cm³/ : 25.6...25.8

100 s: (25.3...26.1)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.2...5.8
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)

Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.50
 2nd speed rpm : 558
 travel mm : 4.30...4.80
 3rd speed rpm : 820
 travel mm : 5.90...6.40
 4th speed rpm : 1108
 travel mm : 8.30...8.80
 5th speed rpm : 1183
 travel mm : 8.30...8.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1130
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 1050
Del.quantity : 256.0...258.0
1000 : (253.0...261.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 14.10
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 76...84

Testing:

Speed rpm : 200
Minimum rack trave: 6.80
Speed rpm : 300
Rack travel in mm : 5.20...5.80

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 0.80
2nd speed rpm : 1050
Rack travel in m: 15.10...15.30
3rd speed rpm : 800
Rack travel in m: 15.90...16.10

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1050
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 9.70...9.90
2nd pressure hPa : 800

Rack travel in m: 13.40...13.60
3rd pressure hPa : 1300
Rack travel in m: 14.80...15.00
4th pressure hPa : 1600
Rack travel in m: 15.40...15.60
5th pressure hPa : -
Rack travel in m: 8.90...9.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1900
Speed rpm : 1050
Del.quantity cm3/ : 271.0...274.0
1000 s: (268.0...277.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1900
Speed rpm : 800
Del.quantity cm3/ : 276.0...280.0
1000 s: (273.0...283.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.10
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 275.0...295.0
1000 s: (260.0...280.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 17,2 f
Edition : 03.06.91
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 648 912
Injection pump
Pump designation : PE8P130A920/5LS7841
EP type number : 0 412 638 803
Governor
Governor design. : RQV300...950PA994K
Governor no. : 0 421 815 275

Customer-spec. information
Customer : IVECO-FIAT

Engine : 8280.42.050

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 40...45

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 688 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 4- 3- 6- 5-
7- 2

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 22.3...22.6

100 s: (21.9...22.9)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 250.0

Rack travel in mm : 6.3...6.7

Del.quantity cm3/ : 2.0...2.6

100 s: (1.6...3.0)

Spread cm3 : 1.0

100 s: (1.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 995
travel mm : 10.20...10.40

2nd speed rpm : 300
travel mm : 2.00...2.30

3rd speed rpm : 700
travel mm : 5.80...6.20

4th speed rpm : 1200
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Aneroid pressure h: 900

Del.quantity : 223.0...226.0

1000 : (219.5...229.5)

Spread cm3 : 6.00

1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:

1st rack travel in: 12.70
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 61...69

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 310...440

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 13.70...13.80
2nd speed rpm : 800
Rack travel in m: 13.70...13.90
3rd speed rpm : 700
Rack travel in m: 13.40...13.60
4th speed rpm : 500
Rack travel in m: 13.10...13.30

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 950
Pressure hPa : 900
Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 950

1st pressure hPa : -
Rack travel in m: 10.40...10.60
2nd pressure hPa : 380
Rack travel in m: 12.90...13.00
3rd pressure hPa : 260
Rack travel in m: 11.10...11.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 500
Del.quantity cm3/ : 227.0...234.0
1000 s: (223.5...237.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 144.0...147.0
1000 s: (140.5...150.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...250.0
1000 s: (216.0...254.0)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 14,5 e1
Edition : 27.05.91
Replaces : 28.3.91
Test oil : ISO-4113

Combination no. : 0 402 648 916

Injection pump
Pump designation : PE8P120A520LS7818-1
EP type number : 0 412 628 857
Governor
Governor design. : RQV250...1150PA902
Governor no. : 0 421 813 720

Customer-spec. information
Customer : MAN

Engine : D2848LXE 40

1st version kW : 500.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.80...13.90

Del.quantity cm3/ : 30.7...30.9

100 s: (30.4...31.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 500
Rack travel in mm : 8.90...9.10
Del.quantity cm3/ : 14.9...15.1
100 s: (14.6...15.4)

Spread cm3 : -0
100 s: (-)

3rd speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 5.2...6.0 *
100 s: (-)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.40...1.60
2nd speed rpm : 450
travel mm : 3.40...4.00
3rd speed rpm : 850
travel mm : 6.30...6.90
4th speed rpm : 1150
travel mm : 9.40...9.60
5th speed rpm : 1450
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1210
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1300
Del.quantity : 307.0...309.0
1000 : (304.0...312.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 12.80
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1295...1325
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 80...88

Testing:

Speed rpm : 100
Minimum rack travel: 8.90
Speed rpm : 250
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 430...490

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 100
Rack travel in m: 9.30...9.40
3rd pressure hPa : 470
Rack travel in m: 12.30...12.60

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.80
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0 *
1000 s: (-)

Speed rpm : 100
Del.quantity cm³/ : 0 **
1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 500
Rack travel in mm : < 7.00
Del.quantity cm³/ : 0 **
1000 s: (-)

2nd version

Speed rpm : 500
Rack travel in mm : < 7.50
Del.quantity cm³/ : < 50.0 **
1000 s: (-)

3rd version

Speed rpm : 500
Rack travel in mm : 7.30...7.50
Del.quantity cm³/ : 125.0... **
1000 s: (-)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm³/ : 52.0...60.0 *
1000 s: (-)

Remarks:

: MAN-NR. 2-7944

* applies to cylinders 2, 3, 4 and 8

** applies for cylinders 1, 5, 6, and 7

APPLICATION

Ship



Note remarks

Combination no. : 0 402 648 917

Customer-spec. information
Customer : MERCEDES-BENZ

1st version kW : 370.0
Rated speed : 2100

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

```
Test nozzle holder
assembly      : 1 688 901 105
```

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Test pressure, bar: 25...27

```

Prestroke mm      : 5.00...5.10
                  : (4.95...5.15)
Rack travel in mm : 20.00...21.00
Firing order      : 8- 7- 2- 6- 3- 5-
                  : 4- 1

```

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

1st speed rpm : 600

Rack travel in mm : 15.10...15.30

Del.quantity cm³/ : 25.6...25.8

100 s: (25.3...26.1)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

1st version

Speed rpm : 600

Aneroid pressure h: 1050

Del.quantity : 256.0...258.0

1000 : (253.0...261.0)

Spread cm³ : 6.00

1000 : (9.00)

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.50
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.20...6.80
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 15.50...15.70
3rd speed rpm : 800
Rack travel in m: 15.70...15.90

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1050
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 9.70...9.90
2nd pressure hPa : 800
Rack travel in m: 13.40...13.60
3rd pressure hPa : 1300
Rack travel in m: 14.80...15.00
4th pressure hPa : 1600
Rack travel in m: 15.40...15.60
5th pressure hPa : -
Rack travel in m: 8.90...9.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1900
Speed rpm : 1050
Del.quantity cm3/ : 271.0...274.0
1000 s: (268.0...277.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1900
Speed rpm : 800
Del.quantity cm3/ : 276.0...280.0
1000 s: (273.0...283.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.50
Speed rpm : 1090...1105

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 w 3
Edition : 03.06.91
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 918

Injection pump
Pump designation : PE8P120A320LS7838
EP type number : 0 412 628 848
Governor
Governor design. : RQ300/1050PA993-4
Governor no. : 0 421 801 602

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 320.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm3/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 1020

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 1020

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.50
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.20...6.80

CONSTANT REGULATION

Speed rpm : 300...500

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 14.50...14.70
3rd speed rpm : 800
Rack travel in m: 15.00...15.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 10.00...10.20
2nd pressure hPa : 700
Rack travel in m: 13.00...13.20
3rd pressure hPa : 1200
Rack travel in m: 14.30...14.50
4th pressure hPa : 1350
Rack travel in m: 14.70...14.90
5th pressure hPa : -
Rack travel in m: 9.20...9.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

B13

1st version

Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm3/ : 226.0...229.0
1000 s: (223.0...232.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm3/ : 239.0...243.0
1000 s: (236.0...246.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 138.0...140.0
1000 s: (135.0...143.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50
Speed rpm : 1090...1105

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 18,2 h1
Edition : 27.05.91
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 649 813

Injection pump
Pump designation : PE10P120A520LS7825-1
EP type number : 0 412 629 809
Governor
Governor design. : RQV250...1150PA902-3
Governor no. : 0 421 813 761

Customer-spec. information
Customer : MAN

Engine : D 2840 LXE

1st version kW : 603.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
: (4.45...4.65)
Rack travel in mm : 9.00...12.00
Firing order : 10- 9- 4- 1- 8- 7-
6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
216-261-288-333
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 28.4...28.6

100 s: (28.1...28.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 500
Rack travel in mm : 8.80...9.00
Del.quantity cm3/ : 14.9...15.1
100 s: (14.6...15.4)

Spread cm3 : 0.8
100 s: (1.2)

3rd speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 5.2...6.0 **
100 s: (-)

Spread cm3 : -
100 s: (-)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 0.90...1.10

2nd speed rpm : 450
travel mm : 2.90...3.50

3rd speed rpm : 750
travel mm : 5.50...5.90

4th speed rpm : 1150
travel mm : 9.20...9.40

5th speed rpm : 1400
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1225

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1300
Del.quantity : 284.0...286.0
1000 : (281.0...289.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 12.00
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1285...1315
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 76...84

Testing:

Speed rpm : 100
Minimum rack travel: 8.90
Speed rpm : 250
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 430...490

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in mm: 8.80...9.00
2nd pressure hPa : 100
Rack travel in mm: 9.30...9.40
3rd pressure hPa : 470
Rack travel in mm: 12.00...12.40

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...120.0**
1000 s: (-)

Speed rpm : 100
Del.quantity cm3/ : 0 *
1000 s: (-)
Rack travel in mm : 17.5...21.0

HIGH IDLE

1st version

Speed rpm : 500
Rack travel in mm : < 7.00
Del.quantity cm3/ : 0 *
1000 s: (-)

2nd version

Speed rpm : 500
Rack travel in mm : < 7.50
Del.quantity cm3/ : < 50.0
1000 s: (-)

3rd version

Speed rpm : 500
Rack travel in mm : 8.10...8.30
Del.quantity cm3/ : 125.0...
1000 s: (-)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 52.0...60.0 **
1000 s: (-)

Remarks:

: MAN-NR. 2-7961

* applies to cylinders 1, 2, 3, 7 and 9

** applies for cylinders 4, 5, 6, 8 and 10

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 g 9
Edition : 27.05.91
Replaces : 26.4.91
Test oil : ISO-4113

Combination no. : 0 402 678 814

Injection pump
Pump designation : PE8P120A320LS7801-2
EP type number : 0 412 628 825
Governor
Governor design. : RSV350...1050POA535-4
Governor no. : 0 421 833 352

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442LA

1st version kW : 260.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness : 6.00x1.50x1000
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
(4.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 13.90...14.10

Del.quantity cm³/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Aneroid pressure h: 700

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 90...98

Testing:
1st rack travel in: 11.50
Speed rpm : 1070...1080
2nd rack travel in: 4.00
Speed rpm : 1140...1158
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.7

Testing:
Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 370...430

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1030
Rack travel in m: 12.50...12.70
2nd speed rpm : 700
Rack travel in m: 14.10...14.30
3rd speed rpm : 900
Rack travel in m: 13.30...13.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 13.90...14.10

Measurement
Speed 1/min : 600

1st pressure hPa : 400
Rack travel in m: 12.30...12.50
2nd pressure hPa : 925
Rack travel in m: 14.00...14.10 *
3rd pressure hPa : -
Rack travel in m: 10.80...11.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1100
Speed rpm : 1030
Del.quantity cm3/ : 181.0...184.0
1000 s: (178.0...187.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1100
Speed rpm : 700
Del.quantity cm3/ : 213.0...217.0
1000 s: (210.0...220.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 143.0...145.0
1000 s: (140.0...148.0)
Spread cm3 : 8.00
1000 s: (-)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...200.0
1000 s: (176.0...204.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 t
Edition : 05.06.91
Replaces : 18.1.91
Test oil : ISO-4113

Combination no. : 0 402 736 808

Injection pump
Pump designation : PES6P120A720/3LS7209
EP type number : 0 412 726 837
Governor
Governor design. : RQV300...1000PA962-1
K
Governor no. : 0 421 815 248

Customer-spec. information
Customer : MAN

Engine : D2866LF06

1st version kW : 309.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
: (4.75...4.95)
Rack travel in mm : 15.00...16.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 28.5...28.7

100 s: (28.2...29.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.8...5.2

Del.quantity cm3/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045

travel mm : 8.40...8.60

2nd speed rpm : 300

travel mm : 2.10...2.30

3rd speed rpm : 500

travel mm : 4.10...4.50

4th speed rpm : 900

travel mm : 6.50...6.90

5th speed rpm : 1350

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1300
Del.quantity : 285.0...287.0
1000 : (282.0...290.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 284...292

Testing:

1st rack travel in: 12.10
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 240...248

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 320...440

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.50...13.60
2nd speed rpm : 1000
Rack travel in m: 13.00...13.20
3rd speed rpm : 750
Rack travel in m: 12.70...12.90
4th speed rpm : 400
Rack travel in m: 11.50...11.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1300
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.80...9.00

2nd pressure hPa : 220
Rack travel in m: 9.10...9.20
3rd pressure hPa : 720
Rack travel in m: 11.40...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1300
Speed rpm : 1000
Del.quantity cm³/ : 261.0...265.0
1000 s: (258.0...268.0)
Aneroid pressure h: 1300
Speed rpm : 750
Del.quantity cm³/ : 271.0...277.0
1000 s: (268.0...280.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 166.0...168.0
1000 s: (163.0...171.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.80...5.20
Del.quantity cm³/ : 20.0...26.0
1000 s: (17.0...29.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7987

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 i
Edition : 03.06.91
Replaces : 16.2.90
Test oil : ISO-4113

Combination no. : 0 402 746 878

Injection pump
Pump designation : PES6P120A320RS7191
EP type number : 0 412 726 828
Governor
Governor design. : RQV275...1000PA927
Governor no. : 0 421 813 808

Customer-spec. information
Customer : RVI

Engine : MIDR 06-35-40

1st version kW : 314.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
: (4.75...4.95)
Rack travel in mm : 12.50...13.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 27.8...28.0

100 s: (27.5...28.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275%

Rack travel in mm : 4.50...4.90

Del.quantity cm3/ : 2.1...2.7

100 s: (1.8...3.0)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
travel mm : 1.10...1.50

2nd speed rpm : 500
travel mm : 3.60...4.20

3rd speed rpm : 700
travel mm : 5.50...5.90

4th speed rpm : 1000
travel mm : 7.60...7.80

5th speed rpm : 1400
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1060

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 278.0...280.0

1000 : (275.0...283.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 300...308

Testing:

1st rack travel in: 13.10
Speed rpm : 1065...1075
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 245...253

Testing:

Speed rpm : 200
Minimum rack travel: 5.90
Speed rpm : 275
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

Speed rpm : 330...430

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.50...9.90
2nd pressure hPa : 520
Rack travel in m: 13.30...13.40
3rd pressure hPa : 200
Rack travel in m: 10.60...11.00

START CUT-OUT

Speed 1/min : 225 (245)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1000

Del.quantity cm3/ : 271.0...277.0
1000 s: (268.0...280.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 153.0...155.0
1000 s: (150.0...158.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack travel: 13.00
Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 145.0...175.0
1000 s: (141.0...179.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : -9.10...-9.50
Del.quantity cm3/ : 21.0...27.0
1000 s: (18.0...30.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 7,8 k
Edition : 27.05.91
Replaces : 16.11.90
Test oil : ISO-4113

Combination no. : 0 402 746 889

Injection pump
Pump designation : PES6P120A720RS7179
EP type number : 0 412 726 826
Governor
Governor design. : RQV350...1000PA917-1
K
Governor no. : 0 421 815 236

Customer-spec. information
Customer : FNH

Engine : 7.8L

1st version kW : 160.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 2 417 413 072

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 160...170

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 4.35...4.45
: (4.30...4.50)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 16.3...16.5

100 s: (16.0...16.8)

Spread cm3 : 0.7

100 s: (1.1)

2nd speed rpm : 350.0
Rack travel in mm : 5.0...5.4
Del.quantity cm3/ : 2.0...2.6
100 s: (1.8...2.8)
Spread cm3 : 0.5
100 s: (0.9)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 2.10...2.40
2nd speed rpm : 450
travel mm : 3.50...3.90
3rd speed rpm : 800
travel mm : 6.90...7.30
4th speed rpm : 1000
travel mm : 8.60...8.80
5th speed rpm : 1200
travel mm : 10.70...11.10

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1230
Rack travel in mm : 6.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000
Aneroid pressure h: 1400
Del.quantity : 163.0...165.0
1000 : (160.0...168.0)
Spread cm3 : 7.00
1000 : (11.00)

RATED SPEED

1st version

Control lever
position degrees: 112...120

Testing:

1st rack travel in: 11.80
Speed rpm : 1050...1060
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 63...71

Testing:

Speed rpm : 275
Minimum rack travel: 6.70
Speed rpm : 350
Rack travel in mm : 5.00...5.40

CONSTANT REGULATION

Speed rpm : 320...500

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.80...12.90
2nd speed rpm : 750
Rack travel in m: 13.30...13.50
3rd speed rpm : 650
Rack travel in m: 12.70...13.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 750
Pressure hPa : 1400
Rack travel mm : 13.30...13.50

Measurement

Speed 1/min : 750

1st pressure hPa : -

B24

Rack travel in m: 8.50...8.90
2nd pressure hPa : 565
Rack travel in m: 10.00...10.10
3rd pressure hPa : 715
Rack travel in m: 10.90...11.30

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 750
Del.quantity cm3/ : 190.0...196.0
1000 s: (187.0...199.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 106.0...108.0
1000 s: (103.0...111.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.80
Speed rpm : 1050...1060

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...180.0
1000 s: (146.0...186.0)
Rack travel in mm : 10.90...11.50

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.00...5.40
Del.quantity cm3/ : 20.0...26.0
1000 s: (18.0...28.0)
Spread cm3 : 5.00
1000 s: (9.50)

Remarks:

: FNH # E9HN-9A543-PA

Bow dimension:

Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 9,5 i
Edition : 03.06.91
Replaces : 27.2.91
Test oil : ISO-4113

Combination no. : 0 402 746 901

Injection pump
Pump designation : PES6P120A72ORS7224
EP type number : 0 412 726 840
Governor
Governor design. : RQV275...1100PA975K
Governor no. : 0 421 815 266

Customer-spec. information
Customer : IVECO-UNIC

Engine : 8460.41.406

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20
: (5.05...5.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.1...5.5

Del.quantity cm3/ : 3.2...3.8

100 s: (2.9...4.1)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1145

travel mm : 10.30...10.50

2nd speed rpm : 275

travel mm : 1.30...1.50

3rd speed rpm : 450

travel mm : 3.40...4.00

4th speed rpm : 750

travel mm : 5.90...6.30

5th speed rpm : 1350

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 11.40
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 100
Minimum rack travel: 6.80
Speed rpm : 275
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00

CONSTANT REGULATION
Speed rpm : 270...400

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.40...12.50
2nd speed rpm : 900
Rack travel in m: 12.30...12.60
3rd speed rpm : 700
Rack travel in m: 11.90...12.10
4th speed rpm : 500
Rack travel in m: 11.20...11.50
5th speed rpm : 350
Rack travel in m: 10.80...11.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 12.40...12.50

Measurement
Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 7.60...7.80

2nd pressure hPa : 710
Rack travel in m: 11.20...11.30
3rd pressure hPa : 400
Rack travel in m: 8.60...9.00

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 900
Del.quantity cm3/ : 240.0...246.0
1000 s: (237.0...249.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 119.0...121.0
1000 s: (116.0...124.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...180.0
1000 s: (146.0...184.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.10...5.50
Del.quantity cm3/ : 32.0...38.0
1000 s: (29.0...41.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 9,5 i 1
 Edition : 03.06.91
 Replaces : 1.3.91
 Test oil : ISO-4113

Combination no. : 0 402 746 902

Injection pump
 Pump designation : PES6P120A720RS7224
 EP type number : 0 412 726 840
 Governor
 Governor design. : RQV275...1100PA975-1
 K
 Governor no. : 0 421 815 267

Customer-spec. information
 Customer : IVECO-UNIC

Engine : 8460.41.320

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20
 : (5.05...5.25)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.20...11.30

Del.quantity cm3/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.1...5.5

Del.quantity cm3/ : 3.2...3.8

100 s: (2.9...4.1)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1145
 travel mm : 10.30...10.50

2nd speed rpm : 275
 travel mm : 1.30...1.50

3rd speed rpm : 450
 travel mm : 3.40...4.00

4th speed rpm : 750
 travel mm : 5.90...6.30

5th speed rpm : 1350
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 209.0...211.0

1000 : (206.0...214.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:

1st rack travel in: 10.20
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 64...72

Testing:

Speed rpm : 100
Minimum rack travel: 6.80
Speed rpm : 275
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00

CONSTANT REGULATION

Speed rpm : 270...400

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.20...11.30
2nd speed rpm : 900
Rack travel in m: 10.70...10.90
3rd speed rpm : 700
Rack travel in m: 9.90...10.10
4th speed rpm : 400
Rack travel in m: 9.30...9.70

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 1100
Pressure hPa : 1200
Rack travel mm : 11.20...11.30

Measurement

Speed 1/min : 1100

1st pressure hPa : -
Rack travel in m: 7.70...7.90
2nd pressure hPa : 600
Rack travel in m: 10.60...10.70

3rd pressure hPa : 420
Rack travel in m: 9.10...9.50

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm³/ : 188.0...194.0
1000 s: (185.0...197.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 120.0...122.0
1000 s: (117.0...125.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 10.20
Speed rpm : 1140...1150

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.10...5.50
Del.quantity cm³/ : 32.0...38.0
1000 s: (29.0...41.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 9,5 i 2
 Edition : 03.06.91
 Replaces : 1.3.91
 Test oil : ISO-4113
 Combination no. : 0 402 746 903
 Injection pump
 Pump designation : PES6P120A720RS7224
 EP type number : 0 412 726 840
 Governor
 Governor design. : RQV275...1100PA888-1
 K
 Governor no. : 0 421 815 268
 Customer spec. information
 Customer : IVECO-UNIC
 Engine : 8460.41.160

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.10...5.20
 : (5.05...5.25)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850
 Rack travel in mm : 11.80...11.90
 Del.quantity cm3/ : 22.4...22.6
 100 s: (22.1...22.9)
 Spread cm3 : 0.5
 100 s: (0.9)
 2nd speed rpm : 275.0
 Rack travel in mm : 5.2...5.6
 Del.quantity cm3/ : 3.0...3.6
 100 s: (2.7...3.9)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1145
 travel mm : 10.10...10.30
 2nd speed rpm : 275
 travel mm : 1.10...1.30
 3rd speed rpm : 400
 travel mm : 2.50...3.10
 4th speed rpm : 750
 travel mm : 5.50...5.90
 5th speed rpm : 1350
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1150
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Aneroid pressure h: 900
 Del.quantity : 224.0...226.0
 1000 : (221.0...229.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:

1st rack travel in: 10.60
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 66...74

Testing:

Speed rpm : 100
Minimum rack travel: 6.90
Speed rpm : 275
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 270...400

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 11.80...11.90
2nd speed rpm : 1100
Rack travel in m: 11.60...11.80
3rd speed rpm : 700
Rack travel in m: 11.20...11.40
4th speed rpm : 400
Rack travel in m: 10.70...11.00

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 850
Pressure hPa : 900
Rack travel mm : 11.80...11.90

Measurement

Speed 1/min : 850

1st pressure hPa : -
Rack travel in m: 8.10...8.30
2nd pressure hPa : 640
Rack travel in m: 10.90...11.00
3rd pressure hPa : 400

C02

Rack travel in m: 8.90...9.20

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1100
Del.quantity cm3/ : 210.0...216.0
1000 s: (207.0...219.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 127.0...129.0
1000 s: (124.0...132.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60
Speed rpm : 1140...1150

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.20...5.60
Del.quantity cm3/ : 30.0...36.0
1000 s: (27.0...39.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 9,5 g
Edition : 27.05.91
Replaces : 16.1.91
Test oil : ISO-4113
Combination no. : 0 402 746 904
Injection pump
Pump designation : PES6P120A720RS7154
EP type number : 0 412 726 811
Governor
Governor design. : RQ275/1100PA980
Governor no. : 0 421 801 555

Customer-spec. information
Customer : IVECO-UNIC

Engine : 8460.41.101

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 19.3...19.5

100 s: (19.0...19.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.8...5.2

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 193.0...195.0

1000 : (190.0...198.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.60

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1225...1255

4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 275
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 330...370

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.60...11.70
2nd speed rpm : 600
Rack travel in m: 11.60...11.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.60...11.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.40...9.60
2nd pressure hPa : 415
Rack travel in m: 10.90...11.00
3rd pressure hPa : 320
Rack travel in m: 9.90...10.20

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 127.0...129.0
1000 s: (124.0...132.0)

BREAKAWAY

CO4

1st version
1mm rack travel less than

full load rack tr: 10.60
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...200.0
1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.80...5.20
Del.quantity cm3/ : 16.0...22.0
1000 s: (13.0...25.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 S 3
Edition : 03.06.91
Replaces : 18.02.91
Test oil : ISO-4113

Combination no. : 0 403 446 235

Injection pump
Pump designation : PES6MW100/32ORS1171
EP type number : 0 413 406 156
Governor
Governor design. : RGV300...1300MW80-5
Governor no. : 0 420 083 197

Customer-spec. information
Customer : RVI

Engine : MIDS 060212B

1st version kW : 113.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 033

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
: (2.95...3.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 8.8...9.0

100 s: (8.6...9.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.40...5.80

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1500

travel mm : 8.70...9.10

2nd speed rpm : 1350

travel mm : 7.60...7.80

3rd speed rpm : 500

travel mm : 2.80...3.40

4th speed rpm : 300

travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 88.0...90.0

1000 : (86.0...92.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 9.80
Speed rpm : 1390...1400
2nd rack travel in: 4.00
Speed rpm : 1505...1535
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.00
Speed rpm : 300
Rack travel in mm : 5.40...5.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.80...8.90

Measurement

Speed 1/min : 500

1st pressure hPa : 100
Rack travel in m: 9.30...9.40
2nd pressure hPa : 200
Rack travel in m: 10.20...10.50
3rd pressure hPa : 700
Rack travel in m: 10.80...10.90

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 900
Del.quantity cm3/ : 86.0...89.0
1000 s: (83.5...91.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 47.0...49.0
1000 s: (45.0...51.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1390...1400

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (87.0...113.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.40...5.80
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

Start-of-delivery mark made with
prestroke 3.00...3.10 mm at barrel 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 8,1 D
 Edition : 03.06.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 446 249
 Injection pump
 Pump designation : PES6MW100/720RS1197
 EP type number : 0 413 406 185
 Governor
 Governor design. : RQV325...1350MW109K
 Governor no. : 0 420 083 997

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8060.45.6700

1st version kW : 165.0
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 14.00...14.10

Del.quantity cm³/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 325.0
 Rack travel in mm : 7.7...7.9
 Del.quantity cm³/ : 2.5...2.9
 100 s: (2.2...3.1)
 Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400
 travel mm : 10.00...10.40
 2nd speed rpm : 825
 travel mm : 4.90...5.10
 3rd speed rpm : 400
 travel mm : 2.90...3.50
 4th speed rpm : 325
 travel mm : 1.50...1.90

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1410
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1350
 Aneroid pressure h: 850
 Del.quantity : 100.0...102.0
 1000 : (98.0...104.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 13.00
Speed rpm : 1410...1420
2nd rack travel in: 4.00
Speed rpm : 1495...1525
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 78...86
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.8

Testing:
Speed rpm : 200
Minimum rack trave: 10.00
Speed rpm : 325
Rack travel in mm : 7.70...7.90

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1350
Rack travel in m: 14.00...14.10
2nd speed rpm : 1200
Rack travel in m: 13.70...13.90
3rd speed rpm : 1000
Rack travel in m: 13.30...13.50
4th speed rpm : 600
Rack travel in m: 13.30...13.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.30...11.40

Measurement
Speed 1/min : 500

1st pressure hPa : 450
Rack travel in m: 11.70...11.80
2nd pressure hPa : 650
Rack travel in m: 12.80...13.10
3rd pressure hPa : 850
Rack travel in m: 13.30...13.50

FUEL DELIVERY CHARACTERISTICS

C08

1st version
Aneroid pressure h: 850
Speed rpm : 1200
Del.quantity cm3/ : 102.5...105.5
1000 s: (100.0...108.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 850
Speed rpm : 1000
Del.quantity cm3/ : 101.5...104.5
1000 s: (99.0...107.0)
Aneroid pressure h: 850
Speed rpm : 600
Del.quantity cm3/ : 106.5...109.5
1000 s: (104.0...112.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 77.5...79.5
1000 s: (75.5...81.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1410...1420

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 65.0...85.0
1000 s: (62.0...88.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 7.70...7.90
Del.quantity cm3/ : 25.0...29.0
1000 s: (22.5...31.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 D 3
Edition : 03.06.91
Replaces : 19.03.91
Test oil : ISO-4113

Combination no. : 0 403 446 279

Injection pump
Pump designation : PES6MW100/720RS1131
EP type number : 0 413 406 123
Governor
Governor design. : RQV300...1200MW105-6
Governor no. : 0 420 082 054

Customer-spec. information
Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 115.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 715 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

C09

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.20...10.30

Del.quantity cm³/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1300

travel mm : 8.80...9.20

2nd speed rpm : 1200

travel mm : 7.40...7.60

3rd speed rpm : 700

travel mm : 6.70...7.30

4th speed rpm : 450

travel mm : 5.10...5.70

5th speed rpm : 300

travel mm : 2.60...3.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: 107

Speed rpm : 800

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 84.0...86.0

1000 : (82.0...88.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 94...102

Testing:
1st rack travel in: 9.20
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1305...1335
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.4

Testing:
Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.00
Speed rpm : 410...470

TORQUE CONTROL
Dimension a mm : 0.80
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 10.20...10.30
2nd speed rpm : 600
Rack travel in m: 10.90...11.10
3rd speed rpm : 1100
Rack travel in m: 10.30...10.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 200
Rack travel mm : 8.90...9.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.60...8.70
2nd pressure hPa : 350
Rack travel in m: 10.20...10.50
3rd pressure hPa : 700
Rack travel in m: 10.90...11.10

START CUT-OUT

Speed 1/min : 200 (230)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm3/ : 78.0...81.0
1000 s: (75.5...83.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 44.0...46.0
1000 s: (42.0...48.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.20
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 6,2 F
Edition : 27.05.91
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 446 281

Injection pump
Pump designation : PES6MW100/72ORS1217
EP type number : 0 413 406 207
Governor
Governor design. : RQ300/1000MW116
Governor no. : 0 420 082 056

Customer-spec. information
Customer : MWM

Engine : TBD226B-6

1st version kw : 150.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10
: (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 14.4...14.6

100 s: (14.2...14.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1100

travel mm : 7.30...7.70

2nd speed rpm : 1000

travel mm : 5.90...6.10

3rd speed rpm : 370

travel mm : 4.70...5.30

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1200

Del.quantity : 144.0...146.0

1000 : (142.0...148.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 91...99

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.40
Speed rpm : 1040...1055
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 28...36
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.0

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.90...6.10

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.70...8.80

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 9.50...9.70
2nd pressure hPa : 650
Rack travel in m: 11.60...11.80
3rd pressure hPa : 1200
Rack travel in m: 12.40...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm³/ : 143.5...146.5
1000 s: (141.0...149.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 64.0...66.0
1000 s: (62.0...68.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1040...1055

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...150.0
1000 s: (137.0...153.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.90...6.10
Del.quantity cm³/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 W 8
 Edition : 27.05.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 446 282
 Injection pump
 Pump designation : PES6MW100/320RS1198
 EP type number : 0 413 406 188
 Governor
 Governor design. : RQV350...1200MW46-39
 Governor no. : 0 420 083 246

Customer-spec. information
 Customer : NAVISTAR

Engine : DTA-466

1st version kW : 186.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
 : (3.20...3.40)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 13.0...13.2

100 s: (12.8...13.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.80...10.20

2nd speed rpm : 1250

travel mm : 7.90...8.10

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Aneroid pressure h: 1200

Del.quantity : 130.0...132.0

1000 : (128.0...134.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Testing:

1st rack travel in: 11.10
Speed rpm : 1270...1290
2nd rack travel in: 4.00
Speed rpm : 1400...1410
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.10...9.20

Measurement

Speed 1/min : 500

1st pressure hPa : 225
Rack travel in m: 9.80...9.90
2nd pressure hPa : 490
Rack travel in m: 11.20...11.60
3rd pressure hPa : 1200
Rack travel in m: 12.10...12.20

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1200
Del.quantity cm³/ : 126.5...130.5
1000 s: (124.5...132.5)
Spread cm³ : 6.50
1000 s: (7.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 69.5...71.5
1000 s: (67.5...73.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1270...1290

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...190.0
1000 s: (145.0...195.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: IHC #1817694C91

Only perform pump setting with original
overflow valve without IH hose and
restrictor 1.2 mm diameter.

In unlatched condition, do not
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 W 7
 Edition : 27.05.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 446 283
 Injection pump
 Pump designation : PES6MW100/32ORS1198
 EP type number : 0 413 406 188
 Governor
 Governor design. : RQV350...1200MW46-40
 Governor no. : 0 420 083 247

Customer-spec. information
 Customer : NAVISTAR

Engine : DTA-466

1st version kW : 186.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
 : (3.20...3.40)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 13.3...13.5

100 s: (13.1...13.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 5.2...5.4
 Del.quantity cm3/ : 1.6...2.0
 100 s: (1.3...2.2)
 Spread cm3 : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450
 travel mm : 9.80...10.20
 2nd speed rpm : 1250
 travel mm : 7.90...8.10
 3rd speed rpm : 550
 travel mm : 3.10...3.70
 4th speed rpm : 350
 travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 800
 Aneroid pressure h: 1200
 Del.quantity : 133.5...135.5
 1000 : (131.5...137.5)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 102...110

Testing:

1st rack travel in: 11.50
Speed rpm : 1270...1290
2nd rack travel in: 4.00
Speed rpm : 1400...1410
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.00...9.10

Measurement

Speed 1/min : 500

1st pressure hPa : 335
Rack travel in mm: 10.00...10.10
2nd pressure hPa : 645
Rack travel in mm: 11.40...11.80
3rd pressure hPa : 1200
Rack travel in mm: 12.50...12.60

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1200
Del.quantity cm³/ : 130.0...134.0
1000 s: (128.0...136.0)
Spread cm³ : 6.50
1000 s: (7.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 68.0...70.0
1000 s: (66.0...72.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 1270...1290

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...190.0
1000 s: (145.0...195.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: IHC #1817695C91

Only perform pump setting with original
overflow valve without IH hose and
restrictor 1.2 mm diameter.

In unlatched condition, do not
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,2 Q
Edition : 27.05.91
Replaces : 17.09.90
Test oil : ISO-4113

Combination no. : 0 403 456 111

Injection pump
Pump designation : PES6MW100/321RS1186
EP type number : 0 413 406 168
Governor
Governor design. : RQ250/1200MW84-4
Governor no. : 0 420 082 044

Customer-spec. information
Customer : MAN

Engine : D 0826 LUH

1st version kW : 157.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
: (3.55...3.75)
Rack travel in mm : 15.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.70...14.80

Del.quantity cm3/ : 12.6...12.8

100 s: (12.4...13.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1230

travel mm : 9.50...9.90

2nd speed rpm : 1250

travel mm : 7.50...7.70

3rd speed rpm : 350

travel mm : 5.20...5.80

4th speed rpm : 250

travel mm : 2.20...2.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: 107

Speed rpm : 1200

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 126.0...128.0

1000 : (124.0...130.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 104...112

Setting point:

Speed rpm : 1200

Rack travel in mm : 15.5

Testing:

1st rack travel in: 13.30

Speed rpm : 1245...1260

2nd rack travel in: 4.00

Speed rpm : 1290...1320

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 70...78

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 5.6

Testing:

Speed rpm : 100

Minimum rack travel: 7.00

Speed rpm : 250

Rack travel in mm : 5.50...5.70

TORQUE CONTROL

Dimension a mm : 0.30

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in mm : 14.70...14.80

2nd speed rpm : 600

Rack travel in mm : 14.80...14.90

3rd speed rpm : 800

Rack travel in mm : 14.80...14.90

4th speed rpm : 1200

Rack travel in mm : 14.30...14.40

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 200

Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in mm : 12.30...12.40

2nd pressure hPa : 400

Rack travel in mm : 13.80...14.10

3rd pressure hPa : 1000

Rack travel in mm : 14.80...14.90

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 600

Del.quantity cm³/ : 126.5...129.5

1000 s: (124.0...132.0)

Spread cm³ : 5.00

1000 s: (7.0)

Aneroid pressure h: 1000

Speed rpm : 800

Del.quantity cm³/ : 126.5...129.5

1000 s: (124.0...132.0)

Aneroid pressure h: 1000

Speed rpm : 1200

Del.quantity cm³/ : 123.0...126.0

1000 s: (120.5...128.5)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm³/ : 74.0...76.0

1000 s: (72.0...78.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack travel: 13.30

Speed rpm : 1245...1260

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 130.0...140.0

1000 s: (127.0...143.0)

LOW IDLE

Speed rpm : 250

Rack travel in mm : 5.50...5.70

Del.quantity cm³/ : 19.0...23.0

1000 s: (16.5...25.5)

Spread cm³ : 3.50

1000 s: (5.50)

Remarks:

: MAN #3-7008

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1

start of delivery



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,3 C
Edition : 03.06.91
Replaces : 19.03.91
Test oil : ISO-4113

Combination no. : 0 403 456 113

Injection pump
Pump designation : PES6MW100/321RS1210
EP type number : 0 413 406 201
Governor
Governor design. : RQ250/1050MW84-6
Governor no. : 0 420 082 049

Customer-spec. information
Customer : MAN

Engine : D 0826 LUH 250

1st version kW : 184.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 15.9...16.1

100 s: (15.7...16.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 4.9...5.1

Del.quantity cm3/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1125

travel mm : 7.30...7.70

2nd speed rpm : 1050

travel mm : 6.10...6.30

3rd speed rpm : 400

travel mm : 5.70...6.30

4th speed rpm : 250

travel mm : 2.50...2.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: 98

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1100

Del.quantity : 159.0...161.0

1000 : (157.0...163.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 95...103

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00

Speed rpm : 1075...1090

2nd rack travel in: 4.00

Speed rpm : 1130...1160

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 72...80

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 5.0

Testing:

Speed rpm : 100

Minimum rack travel: 7.50

Speed rpm : 250

Rack travel in mm : 4.90...5.10

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in mm: 14.00...14.10

2nd speed rpm : 600

Rack travel in mm: 14.00...14.10

3rd speed rpm : 800

Rack travel in mm: 14.00...14.10

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 150

Rack travel mm : 9.50...9.60

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in mm: 9.20...9.30

2nd pressure hPa : 700

Rack travel in mm: 12.80...13.10

3rd pressure hPa : 1100

Rack travel in mm: 14.00...14.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100

Speed rpm : 600

Del.quantity cm³/ : 162.0...165.0

1000 s: (159.5...167.5)

Spread cm³ : 5.00

1000 s: (7.0)

Aneroid pressure h: 1100

Speed rpm : 800

Del.quantity cm³/ : 161.0...164.0

1000 s: (158.5...166.5)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm³/ : 67.0...69.0

1000 s: (65.0...71.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

Speed rpm : 1075...1090

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 80.0...100.0

1000 s: (77.0...103.0)

LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.90...5.10

Del.quantity cm³/ : 13.0...17.0

1000 s: (10.5...19.5)

Spread cm³ : 3.50

1000 s: (5.50)

Remarks:

: MAN #3-7127

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,3 D
Edition : 27.05.91
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 456 115

Injection pump
Pump designation : PES6MW100/321RS1215
EP type number : 0 413 406 205
Governor
Governor design. : RQ250/1200MW84-7
Governor no. : 0 420 082 055

Customer-spec. information
Customer : MAN

Engine : D 0826 LUH 01

1st version kW : 199.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 16.3...16.5

100 s: (16.1...16.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 6.2...6.4

Del.quantity cm3/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1320

travel mm : 9.30...9.70

2nd speed rpm : 1255

travel mm : 6.50...6.70

3rd speed rpm : 360

travel mm : 3.90...4.50

4th speed rpm : 250

travel mm : 1.60...2.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: 107

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1200

Del.quantity : 163.0...165.0

1000 : (161.0...167.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 94...102

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.60
Speed rpm : 1245...1260
2nd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 32...40
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.3

Testing:

Speed rpm : 150
Minimum rack travel: 8.00
Speed rpm : 250
Rack travel in mm : 6.20...6.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 220
Rack travel mm : 10.30...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.10
2nd pressure hPa : 750
Rack travel in m: 12.60...12.90
3rd pressure hPa : 1200
Rack travel in m: 13.60...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm3/ : 167.0...170.0
1000 s: (164.5...172.5)

Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 1200
Speed rpm : 800
Del.quantity cm3/ : 163.0...166.0
1000 s: (160.5...168.5)
Aneroid pressure h: 1200
Speed rpm : 1200
Del.quantity cm3/ : 160.0...163.0
1000 s: (157.5...165.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 77.0...79.0
1000 s: (75.0...81.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60
Speed rpm : 1245...1260

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 70.0...90.0
1000 s: (67.0...93.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.20...6.40
Del.quantity cm3/ : 19.0...23.0
1000 s: (16.5...25.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: MAN #3-7126
Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,3 D 1
 Edition : 03.06.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 456 116
 Injection pump
 Pump designation : PES6MW100/321RS1215
 EP type number : 0 413 406 205
 Governor
 Governor design. : RQ250/1200MW84-7
 Governor no. : 0 420 082 055

Customer-spec. information
 Customer : MAN

Engine : D 0826 LUH 04

1st version kW : 199.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 13.60...13.70
 Del.quantity cm³/ : 16.3...16.5
 100 s: (16.1...16.7)
 Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 250.0
 Rack travel in mm : 6.2...6.4
 Del.quantity cm³/ : 2.1...2.5
 100 s: (1.8...2.7)
 Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1320
 travel mm : 9.30...9.70
 2nd speed rpm : 1255
 travel mm : 6.50...6.70
 3rd speed rpm : 360
 travel mm : 3.90...4.50
 4th speed rpm : 250
 travel mm : 1.60...2.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: 107
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Aneroid pressure h: 1200
 Del.quantity : 163.0...165.0
 1000 : (161.0...167.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 94...102

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.60
Speed rpm : 1245...1260
2nd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 32...40
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.3

Testing:

Speed rpm : 150
Minimum rack travel: 8.00
Speed rpm : 250
Rack travel in mm : 6.20...6.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 220
Rack travel mm : 10.30...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.10
2nd pressure hPa : 750
Rack travel in m: 12.60...12.90
3rd pressure hPa : 1200
Rack travel in m: 13.60...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm3/ : 167.0...170.0
1000 s: (164.5...172.5)

Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 1200
Speed rpm : 800
Del.quantity cm3/ : 163.0...166.0
1000 s: (160.5...168.5)
Aneroid pressure h: 1200
Speed rpm : 1200
Del.quantity cm3/ : 160.0...163.0
1000 s: (157.5...165.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 77.0...79.0
1000 s: (75.0...81.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60
Speed rpm : 1245...1260

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 70.0...90.0
1000 s: (67.0...93.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.20...6.40
Del.quantity cm3/ : 21.0...25.0
1000 s: (18.5...27.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: MAN #3-7137
Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 5,6 B
Edition : 03.06.91
Replaces : 14.07.89
Test oil : ISO-4113

Combination no. : 0 403 474 008

Injection pump
Pump designation : PES4MW100/720RS1181
EP type number : 0 413 404 107
Governor
Governor design. : RSV400...1000MW1A333
Governor no. : 0 420 085 118

Customer-spec. information
Customer : LIEBHERR

Engine : 914

1st version kW : 120.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 049

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 14.6...14.8

100 s: (14.4...15.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 146.0...148.0

1000 : (144.0...150.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 46...54

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.70
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1275
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 480...540

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 11.70...11.80
2nd speed rpm : 600
Rack travel in m: 11.70...11.80
5th speed rpm : 400
Rack travel in m: 13.20...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm³/ : 145.5...148.5
1000 s: (143.0...151.0)
Spread cm³ : 3.50
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...140.0
1000 s: (127.0...143.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.60...5.80
Del.quantity cm³/ : 14.0...18.0
1000 s: (11.5...20.5)
Spread cm³ : 3.50
1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 8,4 E
Edition : 03.06.91
Replaces : 05.11.90
Test oil : ISO-4113

Combination no. : 0 403 474 012

Injection pump
Pump designation : PES4MW100/720r.51207
EP type number : 0 413 404 113
Governor
Governor design. : RSV350...1000MWOA333
-1
Governor no. : 0 420 085 153

Customer-spec. information
Customer : LIEBHERR

Engine : D 914 T

1st version kW : 110.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 049

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness : 6.00X2.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.30...3.40
: (3.25...3.45)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 13.3...13.5

100 s: (13.1...13.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 133.0...135.0

1000 : (131.0...137.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.50
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1110...1140
4th rack travel in: 1275
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 390...450

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 11.50...11.60
2nd speed rpm : 700
Rack travel in m: 11.50...11.60
3rd speed rpm : 500
Rack travel in m: 11.50...11.60
5th speed rpm : 400
Rack travel in m: 13.00...13.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm3/ : 132.0...135.0
1000 s: (129.5...137.5)
Spread cm3 : 3.50
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100

DO1

Del.quantity cm3/ : 130.0...140.0
1000 s: (127.0...143.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 14.0...18.0
1000 s: (11.5...20.5)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 8,4 D
Edition : 03.06.91
Replaces : 18.02.91
Test oil : ISO-4113

Combination no. : 0 403 476 081

Injection pump
Pump designation : PES6MW100/720RS1196
EP type number : 0 413 406 184
Governor
Governor design. : RSV350...1050MWOA338
Governor no. : 0 420 085 138

Customer-spec. information
Customer : LIEBHERR

Engine : D 916 T

1st version kW : 170.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 049

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.40...3.50
: (3.35...3.55)

Rack travel in mm : 9.00...12.00

D02

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 13.3...13.5

100 s: (13.1...13.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 4.8...5.2

Del.quantity cm3/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 750

Del.quantity : 133.0...135.0

1000 : (131.0...137.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 98...106

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.10

Speed rpm : 1070...1080
2nd rack travel in: 4.00
Speed rpm : 1115...1145
4th rack travel in: 1200
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 4.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 4.30...4.70

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 11.10...11.20
2nd speed rpm : 500
Rack travel in m: 11.10...11.20
3rd speed rpm : 800
Rack travel in m: 11.10...11.20
5th speed rpm : 400
Rack travel in m: 12.60...12.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : -
Rack travel mm : 10.70...10.80

Measurement

Speed 1/min : 550

1st pressure hPa : 200
Rack travel in m: 10.90...11.00
2nd pressure hPa : 750
Rack travel in m: 11.10...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750
Speed rpm : 500
Del.quantity cm³/ : 125.0...128.0
1000 s: (122.5...130.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: 750
Speed rpm : 800

Del.quantity cm³/ : 132.0...135.0
1000 s: (129.5...137.5)
Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm³/ : 120.0...122.0
1000 s: (118.0...124.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 425
Rack travel in mm : 4.80...5.20
Del.quantity cm³/ : 14.0...18.0
1000 s: (11.5...20.5)
Spread cm³ : 3.50
1000 s: (5.00)

Remarks:

:

Starting/full-load transition speed
from holding magnet = 500 1/min.

Idle adjustment at 425 min⁻¹

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 D 5
 Edition : 26.04.91
 Replaces : 22.03.91
 Test oil : ISO-4113
 Combination no. : 0 403 476 103
 Injection pump
 Pump designation : PES6MW100/720RS1131
 EP type number : 0 413 406 123
 Governor
 Governor design. : RSV350...1200MWOA342
 -6
 Governor no. : 0 420 085 169

Customer-spec. information
 Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 92.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness : 6.00X1.50X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.10...10.20

Del.quantity cm3/ : 6.4...6.6

100 s: (6.2...6.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.2...6.9

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 750

Del.quantity : 64.0...66.0

1000 : (62.0...68.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 94...102

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.10
Speed rpm : 1235...1240 *
2nd rack travel in: 4.00
Speed rpm : 1270...1283
3rd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 1450
Speed rpm : 0.30...1.70
5th rack travel in: 1245...1265
Speed rpm : 9.10

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 6.20...6.90
Rack travel in mm : 2.00
Speed rpm : 440...500

TORQUE CONTROL

Dimension a mm : 0.80
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 10.10...10.20
2nd speed rpm : 600
Rack travel in m: 10.90...11.00
3rd speed rpm : 1000
Rack travel in m: 10.40...10.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 180
Rack travel mm : 10.50...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.30...10.40
3rd pressure hPa : 750
Rack travel in m: 10.90...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750
Speed rpm : 600
Del.quantity cm3/ : 58.0...61.0
1000 s: (55.5...63.5)

Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 47.0...49.0
1000 s: (45.0...51.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.10
Speed rpm : 1235...1240

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 83.0...93.0
1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.20...6.90
Del.quantity cm3/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

* Read off speed set under 1.
Add 35...43 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

Test hydr. locking device for starting
with 500...1000 hPa air pressure.

Set pneumatic shutoff device to
control-rod stop = 0.5...1.5 mm
control-rod travel at 4.5 bar
atmospheric pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 D 6
 Edition : 03.05.91
 Replaces : 22.03.91
 Test oil : ISO-4113

Combination no. : 0 403 476 104

Injection pump
 Pump designation : PES6MW100/72ORS1131
 EP type number : 0 413 406 123
 Governor
 Governor design. : RSV350...1200MWOA342
 -7
 Governor no. : 0 420 085 170

Customer-spec. information
 Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 100.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 7.4...7.6

100 s: (7.2...7.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.8...6.5

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 750

Del.quantity : 74.0...76.0

1000 : (72.0...78.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.50
Speed rpm : 1240...1245 *
2nd rack travel in: 4.00
Speed rpm : 1280...1293
3rd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 1450
Speed rpm : 0.30...1.70
5th rack travel in: 1240...1255
Speed rpm : 9.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.80...6.50
Rack travel in mm : 2.00
Speed rpm : 450...530

TORQUE CONTROL

Dimension a mm : 0.80
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 10.50...10.60
2nd speed rpm : 600
Rack travel in m: 11.30...11.40
3rd speed rpm : 1000
Rack travel in m: 10.90...11.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 250
Rack travel mm : 10.60...10.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.10
2nd pressure hPa : 300
Rack travel in m: 10.90...11.10
3rd pressure hPa : 750
Rack travel in m: 11.30...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750
Speed rpm : 600

Del.quantity cm3/ : 67.0...70.0
1000 s: (64.5...72.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 47.0...49.0
1000 s: (45.0...51.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1240...1245

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 83.0...93.0
1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.80...6.50
Del.quantity cm3/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

* Read off speed set under 1.
Add 40...48 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

Test hydr. locking device for starting
with 500...1000 hPa air pressure.

Set pneumatic shutoff device to
control-rod stop = 0.5...1.5 mm
control-rod travel at 4.5 bar
atmospheric pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 D 7
Edition : 26.04.91
Replaces : 22.0391
Test oil : ISO-4113

Combination no. : 0 403 476 105

Injection pump
Pump designation : PES6MW100/72ORS1131
EP type number : 0 413 406 123
Governor
Governor design. : RSV350...1200MWOA342
-8
Governor no. : 0 420 085 171

Customer-spec. information
Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 114.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...6.0

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 750

Del.quantity : 84.0...86.0

1000 : (82.0...88.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.90
Speed rpm : 1240...1245 *
2nd rack travel in: 4.00
Speed rpm : 1285...1293
3rd rack travel in: 4.00
Speed rpm : 1325...1355
4th rack travel in: 1450
Speed rpm : 0.30...1.70
5th rack travel in: 1240...1255
Speed rpm : 9.90

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.30...6.00
Rack travel in mm : 2.00
Speed rpm : 420...500

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200
Rack travel in m: 10.90...11.00
2nd speed rpm : 600
Rack travel in m: 11.70...11.80
3rd speed rpm : 1000
Rack travel in m: 11.00...11.20

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 300
Rack travel mm : 10.70...10.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.60...9.70
2nd pressure hPa : 400
Rack travel in m: 11.30...11.50
3rd pressure hPa : 750
Rack travel in m: 11.70...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750
Speed rpm : 600

Del.quantity cm³/ : 78.0...81.0
1000 s: (75.5...83.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 47.0...49.0
1000 s: (45.0...51.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1240...1245

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 83.0...93.0
1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.30...6.00
Del.quantity cm³/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

* Read off speed set under 1.
Add 45...53 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

Test hydr. locking device for starting
with 500...1000 hPa air pressure.

Set pneumatic shutoff device to
control-rod stop = 0.5...1.5 mm
control-rod travel at 4.5 bar
atmospheric pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,7, B
Edition : 26.04.91
Replaces : 19.03.91
Test oil : ISO-4113

Combination no. : 0 403 476 106

Injection pump
Pump designation : PES6MW100/320RS1213
EP type number : 0 413 406 203
Governor
Governor design. : RSV350...750MW7A345
Governor no. : 0 420 085 168

Customer-spec. information
Customer : NAVISTAR

Engine : DT-466

1st version kW : 159.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
: (3.20...3.40)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.20...14.30

Del.quantity cm3/ : 16.2...16.4

100 s: (16.0...16.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 4.7...4.9

Del.quantity cm3/ : 0.8...1.2

100 s: (0.5...1.4)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 162.5...164.5

1000 : (160.5...166.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.20
Speed rpm : 750...760
2nd rack travel in: 4.00
Speed rpm : 795...805
3rd rack travel in: 4.00
Speed rpm : 800...810
4th rack travel in: 850
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 4.70...4.90

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.20
Speed rpm : 750...760

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 160.0...180.0
1000 s: (155.0...185.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 8.0...12.0
1000 s: (5.5...14.5)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 6,1 Q 1
 Edition : 26.04.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 108
 Injection pump
 Pump designation : PES6MW100/320RS1132
 EP type number : 0 413 406 124
 Governor
 Governor design. : RSV325...1400MW2A314
 -3
 Governor no. : 0 420 085 173

Customer-spec. information
 Customer : PENTA

Engine : TD 610M

1st version kW : 147.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 2.00X6.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.90...3.00
 : (2.85...3.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 6.0...6.1

Del.quantity cm3/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 900

Del.quantity : 96.0...98.0

1000 : (94.0...100.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 54...62

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.30

Speed rpm : 1440...1450

2nd rack travel in: 4.00

Speed rpm : 1520...1540
4th rack travel in: 1650
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 325
Rack travel in mm : 5.50...5.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : -
Rack travel mm : 10.00...10.10

Measurement

Speed 1/min : 1000

1st pressure hPa : 130
Rack travel in m: 10.20...10.30
2nd pressure hPa : 420
Rack travel in m: 10.90...11.20
3rd pressure hPa : 900
Rack travel in m: 11.30...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 1000
Del.quantity cm3/ : 78.0...80.0
1000 s: (76.0...82.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 140.0...160.0
1000 s: (137.0...163.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.00...6.10
Del.quantity cm3/ : 12.0...16.0
1000 s: (9.5...18.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 8,7 Q 1
Edition : 27.05.91
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 546 008

Injection pump
Pump designation : PE6MW100/720RS1177
EP type number : 0 413 506 107
Governor
Governor design. : RQ300/1250MW12-2
Governor no. : 0 420 082 020

Customer-spec. information
Customer : MB-NFZ

Engine : OM360A

1st version kW : 147.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.80...3.90
: (3.75...3.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 9.7...9.9

100 s: (9.5...10.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.4...8.6

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 97.0...99.0

1000 : (95.0...101.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Setting point:

Speed rpm : 650

Rack travel in mm : 13.5

Testing:

1st rack travel in: 11.90

Speed rpm : 1295...1310

2nd rack travel in: 4.00

Speed rpm : 1415...1445

4th rack travel in: 1550

Speed rpm : 0.10...1.00

LOW IDLE 1

Control lever

position degrees: 13...21

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 8.5

Testing:

Speed rpm : 220

Minimum rack trave: 10.40

Speed rpm : 300

Rack travel in mm : 8.40...8.60

Rack travel in mm : 2.00

Speed rpm : 430...470

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm3/ : 95.0...98.0

1000 s: (92.5...100.5)

Spread cm3 : 5.00

1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

Speed rpm : 1295...1310

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 80.0...90.0

1000 s: (77.0...93.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 8.40...8.60

Del.quantity cm3/ : 10.0...14.0

1000 s: (7.5...16.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO 13,2 B
 Edition : 27.05.91
 Replaces : 04.11.88
 Test oil : ISO-4113
 Combination no. : 0 403 546 018
 Injection pump
 Pump designation : PE6MW100/32ORS1174
 EP type number : 0 413 506 106
 Governor
 Governor design. : RQV325...1500MW100
 Governor no. : 0 420 083 166

Customer-spec. information
 Customer : BAUDOUIN

Engine : 6 F 11 SRE

1st version kW : 225.0
 Rated speed : 3000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness : 6.00x2.00x600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 3- 6- 5- 2

Phasing : 0-75-120-195-240-315

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1500

Rack travel in mm : 11.50...11.60

Del.quantity cm³/ : 12.9...13.1

100 s: (12.7...13.3)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 6.9...7.1

Del.quantity cm³/ : 0.8...1.2

100 s: (0.5...1.4)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1650

travel mm : 9.40...9.80

2nd speed rpm : 1550

travel mm : 8.50...8.70

3rd speed rpm : 600

travel mm : 2.50...3.10

4th speed rpm : 325

travel mm : 1.00...1.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1500

Del.quantity : 129.0...131.0

1000 : (127.0...133.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 10.50

Speed rpm : 1540...1550

2nd rack travel in: 4.00
Speed rpm : 1635...1665
4th rack travel in: 1750
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.0

Testing:
Speed rpm : 100
Minimum rack trave: 8.50
Speed rpm : 325
Rack travel in mm : 6.90...7.10

START CUT-OUT

Speed 1/min : 230 (250)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.50
Speed rpm : 1540...1550

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 105.0...115.0
1000 s: (102.0...118.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.90...7.10
Del.quantity cm3/ : 8.0...12.0
1000 s: (5.5...14.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO 13,2 B1
 Edition : 17.05.91
 Replaces : 07.02.89
 Test oil : ISO-4113

Combination no. : 0 403 546 019

Injection pump
 Pump designation : PE6MW100/32ORS1174
 EP type number : 0 413 506 106
 Governor
 Governor design. : RQV325...1500MW101
 Governor no. : 0 420 083 167

Customer-spec. information
 Customer : BAUDOUIN

Engine : 6 F 11 SRE

1st version kW : 206.0
 Rated speed : 3000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 9.00...12.00

D18

Firing order : 1- 4- 3- 6- 5- 2

Phasing : 0-75-120-195-240-315

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1500

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 11.9...12.1

100 s: (11.7...12.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 325.0
 Rack travel in mm : 7.0...7.2
 Del.quantity cm3/ : 0.8...1.2
 100 s: (0.5...1.4)

Spread cm3 : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1650
 travel mm : 9.40...9.80
 2nd speed rpm : 1550
 travel mm : 8.50...8.70
 3rd speed rpm : 600
 travel mm : 2.50...3.10
 4th speed rpm : 325
 travel mm : 1.00...1.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1500
 Aneroid pressure h: 700
 Del.quantity : 119.0...121.0
 1000 : (117.0...123.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 52...60

Testing:
 1st rack travel in: 10.10

Speed rpm : 1540...1550
2nd rack travel in: 4.00
Speed rpm : 1625...1655
4th rack travel in: 1750
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.1

Testing:

Speed rpm : 100
Minimum rack travel: 8.50
Speed rpm : 325
Rack travel in mm : 7.00...7.20

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1500
Rack travel in m: 11.10...11.20
2nd speed rpm : 800
Rack travel in m: 11.90...12.00
3rd speed rpm : 1000
Rack travel in m: 11.30...11.50

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 500
Rack travel mm : 11.30...11.40

Measurement

Speed 1/min : 500

1st pressure hPa : 700
Rack travel in m: 11.90...12.00
2nd pressure hPa : 600
Rack travel in m: 11.50...11.60

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 800
Del.quantity cm³/ : 128.5...131.5
1000 s: (126.0...134.0)
Spread cm³ : 5.00
1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 109.0...111.0
1000 s: (107.0...113.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1540...1550

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 105.0...115.0
1000 s: (102.0...118.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 7.00...7.20
Del.quantity cm³/ : 8.0...12.0
1000 s: (5.5...14.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE 6,5 F
Edition : 26.04.91
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 546 020
Injection pump
Pump designation : PE6MW100/720RS1157
EP type number : 0 413 506 103
Governor
Governor design. : RQ250/1200MW94-2
Governor no. : 0 420 082 047

Customer-spec. information
Customer : SNF

Engine : WD 612.66

1st version kW : 165.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
: (2.95...3.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200
Rack travel in mm : 13.50...13.60
Del.quantity cm³/ : 13.1...13.3
100 s: (12.9...13.5)
Spread cm³ : 0.3
100 s: (0.6)

2nd speed rpm : 250.0
Rack travel in mm : 5.8...6.0
Del.quantity cm³/ : 1.2...1.6
100 s: (0.9...1.8)
Spread cm³ : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1320
travel mm : 9.00...9.40
2nd speed rpm : 1250
travel mm : 6.20...6.40
3rd speed rpm : 375
travel mm : 3.30...3.90
4th speed rpm : 250
travel mm : 1.00...1.40

GUIDE SLEEVE POSITION

Control-lever position
Degree: 107
Speed rpm : 800
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1200
Aneroid pressure h: 900
Del.quantity : 131.0...133.0
1000 : (129.0...135.0)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 94...102

Setting point:
Speed rpm : 800
Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.50
Speed rpm : 1235...1250
2nd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.9

Testing:
Speed rpm : 150
Minimum rack travel: 7.50
Speed rpm : 250
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION
Speed rpm : 260...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 400
Rack travel mm : 11.50...11.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.00...11.10
2nd pressure hPa : 660
Rack travel in m: 12.90...13.20
3rd pressure hPa : 900
Rack travel in m: 13.50...13.60

START CUT-OUT

Speed 1/min : 190 (210)

FUEL DELIVERY CHARACTERISTICS

1st version

D21

Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm3/ : 130.5...134.5
1000 s: (128.5...136.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 79.5...81.5
1000 s: (77.5...83.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.50
Speed rpm : 1235...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...140.0
1000 s: (127.0...143.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.80...6.00
Del.quantity cm3/ : 12.0...16.0
1000 s: (9.5...18.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 13,4 D
Edition : 17.05.91
Replaces : 02.05.90
Test oil : ISO-4113

Combination no. : 0 403 548 037

Injection pump
Pump designation : PE8MW100/720LS1128
EP type number : 0 413 508 103
Governor
Governor design. : RQV450...1150MW70-2
Governor no. : 0 420 083 211

Customer-spec. information
Customer : KHD

Engine : BF 8L 513

1st version kW : 191.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
: (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 12.2...12.4

100 s: (12.0...12.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 450.0
Rack travel in mm : 5.6...5.8
Del.quantity cm3/ : 1.3...1.7
100 s: (1.0...1.9)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1200
travel mm : 9.30...9.40
2nd speed rpm : 1000
travel mm : 6.20...6.40
3rd speed rpm : 600
travel mm : 2.50...3.10
4th speed rpm : 450
travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1150
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Del.quantity : 122.0...124.0
1000 : (120.0...126.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SETTING

1st version
Control lever
position degrees: 118...126

Setting point:
Speed rpm : 1150
Rack travel in mm : 16.5

Testing:
1st rack travel in: 10.30
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1230...1260
4th rack travel in: 1320
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 80...88
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 5.7

Testing:
Speed rpm : 100
Minimum rack trave: 7.50
Speed rpm : 450
Rack travel in mm : 5.60...5.80

START CUT-OUT

Speed 1/min : 350 (370)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.30
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...150.0
1000 s: (137.0...153.0)

LOW IDLE

Speed rpm : 450
Rack travel in mm : 5.60...5.80
Del.quantity cm³/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 t1
Edition : 25.06.91
Replaces : 18.1.91
Test oil : ISO-4113

Combination no. : 0 402 736 809

Injection pump
Pump designation : PES6P120A720/3LS7209
EP type number : 0 412 726 837
Governor
Governor design. : RQV300...1000PA960-2
K
Governor no. : 0 421 815 249

Customer-spec. information
Customer : MAN

Engine : D2866LF06

1st version kW : 309.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
(4.75...4.95)
Rack travel in mm : 15.00...16.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 28.5...28.7

100 s: (28.2...29.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.8...5.2

Del.quantity cm3/ : 2.0...2.6
100 s: (1.7...2.9)

Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
travel mm : 9.60...9.80

2nd speed rpm : 300
travel mm : 1.40...1.80

3rd speed rpm : 500
travel mm : 3.50...4.10

4th speed rpm : 900
travel mm : 7.70...8.10

5th speed rpm : 1350
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1300
Del.quantity : 285.0...287.0
1000 : (282.0...290.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 293...301

Testing:

1st rack travel in: 12.10
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 247...255

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 320...440

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.50...13.60
2nd speed rpm : 1000
Rack travel in m: 13.00...13.20
3rd speed rpm : 750
Rack travel in m: 12.70...12.90
4th speed rpm : 400
Rack travel in m: 11.50...11.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1300
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.80...9.00

2nd pressure hPa : 220
Rack travel in m: 9.10...9.20
3rd pressure hPa : 720
Rack travel in m: 11.40...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1300
Speed rpm : 1000
Del.quantity cm³/ : 261.0...265.0
1000 s: (258.0...268.0)
Aneroid pressure h: 1300
Speed rpm : 750
Del.quantity cm³/ : 271.0...277.0
1000 s: (268.0...280.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 166.0...168.0
1000 s: (163.0...171.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.10
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.80...5.20
Del.quantity cm³/ : 20.0...26.0
1000 s: (17.0...29.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7052

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 e
Edition : 17.06.91
Replaces : 4.9.90
Test oil : ISO-4113

Combination no. : 0 402 746 885

Injection pump
Pump designation : PES6P120A72ORS7157
EP type number : 0 412 726 814
Governor
Governor design. : RQV325...875PA944-3K
Governor no. : 0 421 815 238

Customer-spec. information
Customer : MACK TRUCKS

Engine : EM7-275

1st version kW : 205.0
Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Overflow
quantity min. 1/h: 160...170

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
: (2.70...2.90)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 19.2...19.4

100 s: (19.0...19.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0
Rack travel in mm : 4.7...4.9
Del.quantity cm3/ : 4.0...4.6
100 s: (3.8...4.8)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
travel mm : 1.20...1.40
2nd speed rpm : 450
travel mm : 2.80...3.20
3rd speed rpm : 650
travel mm : 5.60...5.80
4th speed rpm : 900
travel mm : 8.30...8.50
5th speed rpm : 1100
travel mm : 10.30...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 875
Aneroid pressure h: 1200
Del.quantity : 192.0...194.0
1000 : (190.0...196.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 54...62

Testing:
1st rack travel in: 10.40
Speed rpm : 915...925
2nd rack travel in: 4.00
Speed rpm : 1025...1055
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 5.90
Speed rpm : 325
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 11.40...11.50
2nd speed rpm : 510
Rack travel in m: 12.80...13.00
3rd speed rpm : 600
Rack travel in m: 12.40...12.80
4th speed rpm : 450
Rack travel in m: 0.00...12.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 12.80...13.00

Measurement
Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 8.00...8.40
2nd pressure hPa : 355
Rack travel in m: 9.40...9.50
3rd pressure hPa : 630
Rack travel in m: 11.50...11.90

START CUT-OUT

D27

Speed 1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 510
Del.quantity cm3/ : 268.0...274.0
1000 s: (266.0...276.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 850
Del.quantity cm3/ : 159.0...161.0 *
1000 s: (136.5...157.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 157.5...161.5
1000 s: (155.5...163.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.40
Speed rpm : 915...925

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...230.0
1000 s: (180.0...240.0)
Rack travel in mm : 10.40...11.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
: MACK # 313GC5185-P22

* This test specification applies only to the engine/nozzle-and-holder assemblies on an injection-pump test bench: setting for test equipment, check value for engine equipment.

Bow dimension:
Sliding-sleeve position = 37.0 mm

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 D15
Edition : 05.07.91
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 436 109

Injection pump
Pump designation : PES6MW100/120RS1143
EP type number : 0 413 406 137
Governor
Governor design. : RQV300...1050MW82-4
Governor no. : 0 420 083 168

Customer-spec. information
Customer : CUMMINS/US

Engine : 6 CTA-830

1st version kW : 175.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.05...3.15
: (3.00...3.20)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 14.8...15.0

100 s: (14.6...15.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 7.7...7.9
Del.quantity cm3/ : 1.6...2.0
100 s: (1.3...2.2)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1210
travel mm : 9.00...9.40
2nd speed rpm : 1100
travel mm : 7.90...8.10
3rd speed rpm : 550
travel mm : 3.00...3.60
4th speed rpm : 300
travel mm : 1.10...1.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 900
Del.quantity : 148.0...150.0
1000 : (146.0...152.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 42...50

Testing:

1st rack travel in: 11.60
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.8

Testing:

Speed rpm : 100
Minimum rack travel: 9.30
Speed rpm : 300
Rack travel in mm : 7.70...7.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.20...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : 225
Rack travel in m: 10.90...11.00
2nd pressure hPa : 450
Rack travel in m: 11.90...12.30
3rd pressure hPa : 900
Rack travel in m: 12.60...12.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm³/ : 145.5...148.5
1000 s: (143.0...151.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 88.5...90.5
1000 s: (86.5...92.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 215.0...225.0
1000 s: (212.0...228.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.70...7.90
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: CUM #3915581

Start-of-delivery mark/lock = 8.0°
angular displacement of the cam after
start of delivery of cylinder 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 6,2 G 1
 Edition : 05.07.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 436 113
 Injection pump
 Pump designation : PES6MW100/320/3RS116
 2
 EP type number : 0 413 406 149
 Governor
 Governor design. : RQ300/1000MW117
 Governor no. : 0 420 082 057

Customer-spec. information
 Customer : MWM

Engine : TBD226B-6

1st version kW : 150.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10
 : (3.95...4.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 14.4...14.6

100 s: (14.2...14.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1100

travel mm : 7.30...7.70

2nd speed rpm : 1000

travel mm : 5.90...6.10

3rd speed rpm : 370

travel mm : 4.70...5.30

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: 107

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1200

Del.quantity : 144.0...146.0

1000 : (142.0...148.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 91...99

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.40
Speed rpm : 1040...1055
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 28...36
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.0

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.90...6.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.70...8.80

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 9.50...9.70
2nd pressure hPa : 650
Rack travel in m: 11.60...11.80
3rd pressure hPa : 1200
Rack travel in m: 12.40...12.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm3/ : 143.5...146.5
1000 s: (141.0...149.0)
Spread cm3 : 5.00
1000 s: (7.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 64.0...66.0
1000 s: (62.0...68.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.40
Speed rpm : 1040...1055

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...150.0
1000 s: (137.0...153.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 V
Edition : 21.06.91
Replaces : 05.11.90
Test oil : ISO-4113

Combination no. : 0 403 446 230

Injection pump
Pump designation : PES6MW100/320RS1185
EP type number : 0 413 406 170
Governor
Governor design. : RQV350...1200MW64-2
Governor no. : 0 420 083 194

Customer-spec. information
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 201.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.75...3.85
: (3.70...3.90)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 14.2...14.4

100 s: (14.0...14.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 6.0...6.2
Del.quantity cm3/ : 1.4...1.8
100 s: (1.1...2.0)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
travel mm : 8.30...8.50
2nd speed rpm : 1460
travel mm : 9.10...9.50
3rd speed rpm : 550
travel mm : 3.10...3.70
4th speed rpm : 350
travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1200
Aneroid pressure h: 800
Del.quantity : 142.5...144.5
1000 : (140.5...146.5)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 42...50

Testing:

1st rack travel in: 13.00
Speed rpm : 1265...1285
2nd rack travel in: 4.00
Speed rpm : 1415...1425
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 9...17
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.1

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION

Speed rpm : 360...450

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 14.00...14.10
2nd speed rpm : 800
Rack travel in m: 14.40...14.60
3rd speed rpm : 1150
Rack travel in m: 14.10...14.30

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 265
Rack travel mm : 11.50...11.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.20
2nd pressure hPa : 480
Rack travel in m: 13.30...13.60
3rd pressure hPa : 800
Rack travel in m: 14.40...14.60

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800
Speed rpm : 800
Del.quantity cm3/ : 151.0...155.0
1000 s: (149.0...157.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 83.5...85.5
1000 s: (81.5...87.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1265...1285

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...180.0
1000 s: (137.0...183.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.00...6.20
Del.quantity cm3/ : 14.0...18.0
1000 s: (11.5...20.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: IHC #1815225C91

Only perform pump setting with original overflow valve without IH hose and restrictor 1.2 mm diameter.

Before checking sleeve position, first adjust latching.

In unlatched condition, do not operate greater than $n = 500$ 1/min

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 8,1 D
Edition : 21.06.91
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 446 249

Injection pump
Pump designation : PES6MW100/720RS1197
EP type number : 0 413 406 185
Governor
Governor design. : RQV325...1350MW109K
Governor no. : 0 420 083 997

Customer-spec. information
Customer : IVECO-FIAT

Engine : 8060.45.6700

1st version kW : 165.0
Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 325.0
Rack travel in mm : 7.7...7.9
Del.quantity cm3/ : 2.5...2.9
100 s: (2.2...3.1)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400
travel mm : 10.00...10.40
2nd speed rpm : 825
travel mm : 4.90...5.10
3rd speed rpm : 400
travel mm : 2.90...3.50
4th speed rpm : 325
travel mm : 1.50...1.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1350
Aneroid pressure h: 850
Del.quantity : 100.0...102.0
1000 : (98.0...104.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:

1st rack travel in: 13.00
Speed rpm : 1410...1420
2nd rack travel in: 4.00
Speed rpm : 1495...1525
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 78...86
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.8

Testing:

Speed rpm : 200
Minimum rack travel: 10.00
Speed rpm : 325
Rack travel in mm : 7.70...7.90

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1350
Rack travel in m: 14.00...14.10
2nd speed rpm : 1200
Rack travel in m: 13.70...13.90
3rd speed rpm : 1000
Rack travel in m: 13.30...13.50
4th speed rpm : 600
Rack travel in m: 13.30...13.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.30...11.40

Measurement

Speed 1/min : 500

1st pressure hPa : 450
Rack travel in m: 11.70...11.80
2nd pressure hPa : 650
Rack travel in m: 12.80...13.10
3rd pressure hPa : 850
Rack travel in m: 13.30...13.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 850
Speed rpm : 1200

Del.quantity cm3/ : 102.5...105.5
1000 s: (100.0...108.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 850
Speed rpm : 1000
Del.quantity cm3/ : 101.5...104.5
1000 s: (99.0...107.0)
Aneroid pressure h: 850
Speed rpm : 600
Del.quantity cm3/ : 106.5...109.5
1000 s: (104.0...112.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 77.5...79.5
1000 s: (75.5...81.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1410...1420

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 65.0...85.0
1000 s: (62.0...88.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 7.70...7.90
Del.quantity cm3/ : 25.0...29.0
1000 s: (22.5...31.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,2 W
Edition : 21.06.91
Replaces : 20.07.90
Test oil : ISO-4113

Combination no. : 0 403 456 109

Injection pump
Pump designation : PES6MW100/321RS1200
EP type number : 0 413 406 189
Governor
Governor design. : RQV250...1200MW83-2
Governor no. : 0 420 083 216

Customer-spec. information
Customer : MAN

Engine : D 0826 LF02

1st version kW : 169.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00

E09

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 13.7...13.9

100 s: (13.5...14.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 4.9...5.1

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250
travel mm : 10.50...10.60

2nd speed rpm : 810
travel mm : 5.90...6.10

3rd speed rpm : 500
travel mm : 3.70...4.30

4th speed rpm : 250
travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 137.0...139.0

1000 : (135.0...141.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 120...128

Testing:

1st rack travel in: 11.50
Speed rpm : 1245...1260
2nd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 77...85
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 250
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 330...420

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 170
Rack travel mm : 10.00...10.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...9.80
2nd pressure hPa : 550
Rack travel in m: 11.90...12.20
3rd pressure hPa : 1000
Rack travel in m: 12.50...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm3/ : 135.0...138.0
1000 s: (132.5...140.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 1000
Speed rpm : 800
Del.quantity cm3/ : 138.0...141.0
1000 s: (135.5...143.5)
Aneroid pressure h: 1000
Speed rpm : 1200

Del.quantity cm3/ : 136.0...139.0
1000 s: (133.5...141.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 74.0...76.0
1000 s: (72.0...78.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 1245...1260

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 80.0...100.0
1000 s: (77.0...103.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.90...5.10
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: MAN 3-7036

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,2 V
Edition : 28.06.91
Replaces : 20.07.90
Test oil : ISO-4113

Combination no. : 0 403 456 110

Injection pump
Pump designation : PES6MW100/321RS1201
EP type number : 0 413 406 190
Governor
Governor design. : RQ250/1200MW84-3
Governor no. : 0 420 082 043

Customer-spec. information
Customer : MAN

Engine : D 0826 LF02

1st version kW : 169.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
: (3.45...3.65)

Rack travel in mm : 15.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 13.7...13.9

100 s: (13.5...14.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1300
travel mm : 8.40...8.80

2nd speed rpm : 1260
travel mm : 6.60...6.80

3rd speed rpm : 345
travel mm : 4.00...4.60

4th speed rpm : 250
travel mm : 1.80...2.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: 107

Speed rpm : 600

Rack travel in mm : 18.20...19.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 137.0...139.0

1000 : (135.0...141.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 92...100

Setting point:

Speed rpm : 600

Rack travel in mm : 19.0

Testing:

1st rack travel in: 11.30

Speed rpm : 1245...1260

2nd rack travel in: 4.00

Speed rpm : 1300...1330

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 69...77

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 5.5

Testing:

Speed rpm : 100

Minimum rack travel: 7.00

Speed rpm : 250

Rack travel in mm : 5.40...5.60

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 12.50...12.60

2nd speed rpm : 600

Rack travel in m: 12.70...12.90

3rd speed rpm : 800

Rack travel in m: 12.70...12.90

4th speed rpm : 1200

Rack travel in m: 12.20...12.40

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 170

Rack travel mm : 10.20...10.30

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.00...10.10

2nd pressure hPa : 550

Rack travel in m: 11.90...12.20

3rd pressure hPa : 1000

Rack travel in m: 12.70...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 600

Del.quantity cm3/ : 137.0...140.0

1000 s: (134.5...142.5)

Spread cm3 : 5.00

1000 s: (7.0)

Aneroid pressure h: 1000

Speed rpm : 800

Del.quantity cm3/ : 140.0...143.0

1000 s: (137.5...145.5)

Aneroid pressure h: 1000

Speed rpm : 1200

Del.quantity cm3/ : 134.5...137.5

1000 s: (132.0...140.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 74.0...76.0

1000 s: (72.0...78.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

Speed rpm : 1245...1260

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 60.0...80.0

1000 s: (57.0...83.0)

LOW IDLE

Speed rpm : 250

Rack travel in mm : 5.40...5.60

Del.quantity cm3/ : 16.0...20.0

1000 s: (13.5...22.5)

Spread cm3 : 5.00

1000 s: (7.00)

Remarks:

: MAN #3-7047

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,2 V 1
Edition : 28.06.91
Replaces : 18.02.91
Test oil : ISO-4113

Combination no. : 0 403 456 114

Injection pump
Pump designation : PES6MW100/321RS1201
EP type number : 0 413 406 190
Governor
Governor design. : RGV250...1200MW83-2
Governor no. : 0 420 083 216

Customer-spec. information
Customer : MAN

Engine : D 0826 LF02

1st version kW : 169.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 13.7...13.9

100 s: (13.5...14.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250
travel mm : 10.50...10.60

2nd speed rpm : 810
travel mm : 5.90...6.10

3rd speed rpm : 500
travel mm : 3.70...4.30

4th speed rpm : 250
travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 137.0...139.0

1000 : (135.0...141.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 120...128

Testing:
1st rack travel in: 11.30
Speed rpm : 1245...1260
2nd rack travel in: 4.00
Speed rpm : 1320...1350
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.5

Testing:
Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 250
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 330...420

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.50...12.60
2nd speed rpm : 600
Rack travel in m: 12.70...12.90
3rd speed rpm : 800
Rack travel in m: 12.70...12.90
4th speed rpm : 1200
Rack travel in m: 12.20...12.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 170
Rack travel mm : 10.20...10.30

Measurement
Speed 1/min : 500
Rack travel in m: 10.00...10.10
2nd pressure hPa : 550
Rack travel in m: 11.90...12.20
3rd pressure hPa : 1000
Rack travel in m: 12.70...12.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 600

Del.quantity cm³/ : 137.0...140.0
1000 s: (134.5...142.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: 1000
Speed rpm : 800
Del.quantity cm³/ : 140.0...143.0
1000 s: (137.5...145.5)
Aneroid pressure h: 1000
Speed rpm : 1200
Del.quantity cm³/ : 134.5...137.5
1000 s: (132.0...140.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 74.0...76.0
1000 s: (72.0...78.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack travel: 11.30
Speed rpm : 1245...1260

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 60.0...80.0
1000 s: (57.0...83.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:
: MAN #3-7135
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,3 D 2
Edition : 21.06.91
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 456 117

Injection pump
Pump designation : PES6MW100/321RS1215
EP type number : 0 413 406 205
Governor
Governor design. : RQV250...1200MW83-2
Governor no. : 0 420 083 216

Customer-spec. information
Customer : MAN

Engine : D 0826 LF 04

1st version kW : 199.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 16.3...16.5

100 s: (16.1...16.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 6.2...6.4

Del.quantity cm3/ : 2.1...2.5

100 s: (1.8...2.7)

Spread cm3 : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1200

Del.quantity : 163.0...165.0

1000 : (161.0...167.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 94...102

Testing:

1st rack travel in: 12.60

Speed rpm : 1250...1260

2nd rack travel in: 4.00

Speed rpm : 1320...1350

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 32...40

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.3

Testing:

Speed rpm : 150
Minimum rack trave: 8.00
Speed rpm : 250
Rack travel in mm : 6.20...6.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 200
Rack travel mm : 10.30...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.10
2nd pressure hPa : 750
Rack travel in m: 12.60...12.90
3rd pressure hPa : 1200
Rack travel in m: 13.60...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm3/ : 167.0...170.0
1000 s: (164.5...172.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 1200
Speed rpm : 800
Del.quantity cm3/ : 163.0...166.0
1000 s: (160.5...168.5)
Aneroid pressure h: 1200
Speed rpm : 1200
Del.quantity cm3/ : 160.0...163.0
1000 s: (157.5...165.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 77.0...79.0
1000 s: (75.0...81.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60
Speed rpm : 1250...1260

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 70.0...90.0
1000 s: (67.0...93.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.20...6.40
Del.quantity cm3/ : 21.0...25.0
1000 s: (18.5...27.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: MAN 3-7138

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 6,2 F
Edition : 21.06.91
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 466 125

Injection pump
Pump designation : PES6MW100/320/3RS116
2-1

EP type number : 0 413 406 196
Governor
Governor design. : RSV325...900MW1A340
Governor no. : 0 420 085 144

Customer-spec. information
Customer : MWM

Engine : TD 226 B-6
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10
: (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 10.40...10.50

Del.quantity cm³/ : 11.6...11.8

100 s: (11.4...12.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 6.5...6.7

Del.quantity cm³/ : 0.8...1.2

100 s: (0.5...1.4)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 116.5...118.5

1000 : (114.5...120.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.40

Speed rpm : 940...950

2nd rack travel in: 4.00

Speed rpm : 980...1010
4th rack travel in: 1100
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 65...73
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 325
Rack travel in mm : 6.50...6.70

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.40
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0
1000 s: (97.0...123.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.50...6.70
Del.quantity cm³/ : 8.0...12.0
1000 s: (5.5...14.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 T
 Edition : 05.07.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 466 126
 Injection pump
 Pump designation : PES6MW100/12ORS1218
 EP type number : 0 413 406 208
 Governor
 Governor design. : RSV400...1050MW7A319
 -17
 Governor no. : 0 420 085 174

Customer-spec. information
 Customer : CUMMINS

Engine : 6 CTA

1st version kW : 261.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.15...3.25
 : (3.10...3.30)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 15.30...15.40

Del.quantity cm3/ : 20.7...20.9

100 s: (20.5...21.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 1.7...2.1

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 207.0...209.0

1000 : (205.0...211.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 108...116

Setting point:

Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 14.30
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1125...1155
3rd rack travel in: 4.00
Speed rpm : 1135...1165
4th rack travel in: 1250
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 6.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 6.70...6.90

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.30
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 125.0...145.0
1000 s: (122.0...148.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 7.20...7.40
Del.quantity cm³/ : 17.5...21.5
1000 s: (15.0...24.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: CUM #3919723

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 4,1 H 2
Edition : 21.06.91
Replaces : 19.03.91
Test oil : ISO-4113

Combination no. : 0 403 474 014

Injection pump
Pump designation : PES4MW100/720RS1187
EP type number : 0 413 404 108
Governor
Governor design. : RS300/1250MWOA344
Governor no. : 0 420 084 002

Customer-spec. information
Customer : KHD

Engine : BF 4L 913C

1st version kW : 92.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
x Wall thickness : 6.00X2.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.95...4.05
: (3.90...4.10)

Rack travel in mm : 9.00...12.00

E21

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 11.8...12.0

100 s: (11.6...12.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1000

Del.quantity : 118.0...120.0

1000 : (116.0...122.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.00

Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1385...1415
4th rack travel in: 1550
Speed rpm : 0.30...1.70

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.3
Speed rpm : 300
Rack travel in mm : 7.20...7.40

TORQUE CONTROL

Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 11.90...12.00
2nd speed rpm : 800
Rack travel in m: 12.40...12.50
3rd speed rpm : 900
Rack travel in m: 12.10...12.30
4th speed rpm : 1000
Rack travel in m: 12.00...12.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.00...10.10

Measurement

Speed 1/min : 500

1st pressure hPa : 320
Rack travel in m: 10.80...11.00
2nd pressure hPa : 470
Rack travel in m: 11.70...11.90
3rd pressure hPa : 1000
Rack travel in m: 12.40...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 800
Del.quantity cm3/ : 113.5...116.5
1000 s: (111.0...119.0)
Spread cm3 : 3.50
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 66.0...68.0
1000 s: (64.0...70.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.20...7.40
Del.quantity cm3/ : 12.0...16.0
1000 s: (9.5...18.5)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 6,1 R
 Edition : 24.04.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 102
 Injection pump
 Pump designation : PES6MW100/320RS1211
 EP type number : 0 413 406 202
 Governor
 Governor design. : RSV650...750MW4A311-
 5
 Governor no. : 0 420 085 166

Customer-spec. information
 Customer : PENTA

Engine : TID 61 AG

1st version kW : 115.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.90...3.00
 : (2.85...3.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.20...11.30

Del.quantity cm3/ : 12.4...12.6

100 s: (12.2...12.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 650.0

Rack travel in mm : 5.0...5.5

Del.quantity cm3/ : 1.7...2.1

100 s: (1.5...2.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 124.0...126.0

1000 : (122.0...128.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 84...92

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.20

Speed rpm : 748...753
2nd rack travel in: 4.00
Speed rpm : 773...788
3rd rack travel in: 4.00 *
Speed rpm : 795...810
4th rack travel in: 1000
Speed rpm : 0.30...1.70

LOW IDLE 1

Control Lever
position degrees: 78...86
Setting point w/out bumper spring
Speed rpm : 650
Rack travel in mm : 4.2

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 650
Rack travel in mm : 4.00...4.50

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.20
Speed rpm : 748...753

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (137.0...163.0)

LOW IDLE

Speed rpm : 650
Rack travel in mm : 5.00...5.50
Del.quantity cm3/ : 17.0...21.0
1000 s: (15.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 6,1 Q 1
 Edition : 28.06.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 108
 Injection pump
 Pump designation : PES6MW100/32ORS1132
 EP type number : 0 413 406 124
 Governor
 Governor design. : RSV325...1400MW2A314
 -3
 Governor no. : 0 420 085 173

Customer-spec. information
 Customer : PENTA

Engine : TD 610M

1st version kW : 147.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 2.00X6.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.90...3.00
 : (2.85...3.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 900

Del.quantity : 96.0...98.0

1000 : (94.0...100.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 104...112

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.30
Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1520...1540
3rd rack travel in: 4.00
Speed rpm : 1540...1570
4th rack travel in: 1650
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 325
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 540...600

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : -
Rack travel mm : 10.10...10.20

Measurement

Speed 1/min : 1000

1st pressure hPa : 130
Rack travel in m: 10.20...10.30
2nd pressure hPa : 420
Rack travel in m: 11.00...11.30
3rd pressure hPa : 900
Rack travel in m: 11.30...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 1000
Del.quantity cm3/ : 78.0...80.0
1000 s: (76.0...82.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30

Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 125.0...145.0
1000 s: (122.0...148.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.00...6.20
Del.quantity cm3/ : 12.0...16.0
1000 s: (9.5...18.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 13,4 F
Edition : 21.06.91
Replaces : 28.11.88
Test oil : ISO-4113

Combination no. : 0 403 548 027

Injection pump
Pump designation : PE8MW100/720LS1173
EP type number : 0 413 508 108
Governor
Governor design. : RQV300...1150MW99
Governor no. : 0 420 083 163

Customer-spec. information
Customer : KHD

Engine : F8L513

1st version kW : 188.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
: (3.05...3.25)
Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
Rack travel in mm : 12.00...12.10
Del.quantity cm3/ : 11.5...11.7
100 s: (11.3...11.9)
Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 5.0...5.2
Del.quantity cm3/ : 1.1...1.5
100 s: (0.8...1.7)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1280
travel mm : 11.10...11.50
2nd speed rpm : 1190
travel mm : 10.10...10.30
3rd speed rpm : 400
travel mm : 2.90...3.50
4th speed rpm : 300
travel mm : 2.20...2.60

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1200
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Del.quantity : 115.0...117.0
1000 : (113.0...119.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 45...53

Testing:

1st rack travel in: 11.00
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1290...1320
4th rack travel in: 1370
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 300
Rack travel in mm : 5.00...5.20

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 12.00...12.10
2nd speed rpm : 650
Rack travel in m: 12.30...12.40
3rd speed rpm : 1000
Rack travel in m: 12.20...12.30

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650
Del.quantity cm³/ : 113.5...116.5
1000 s: (111.0...119.0)
Spread cm³ : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.00...5.20
Del.quantity cm³/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 13,4 F1
Edition : 21.06.91
Replaces : 07.02.89
Test oil : ISO-4113

Combination no. : 0 403 548 032

Injection pump
Pump designation : PE8MW100/720LS1173
EP type number : 0 413 508 108
Governor
Governor design. : RQ300/1150MW61-2
Governor no. : 0 420 082 036

Customer spec. information
Customer : KHD

Engine : F8L513

1st version kW : 188.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
: (3.05...3.25)
Rack travel in mm : 9.00...12.00

F01

Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 11.5...11.7

100 s: (11.3...11.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.1

Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1270

travel mm : 8.50...9.00

2nd speed rpm : 1210

travel mm : 6.60...6.80

3rd speed rpm : 420

travel mm : 3.50...4.10

4th speed rpm : 300

travel mm : 1.50...1.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: 107

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 115.0...117.0

1000 : (113.0...119.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 26...34

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.00
Speed rpm : 1190...1205
2nd rack travel in: 4.00
Speed rpm : 1245...1275
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack trave: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 12.00...12.10
2nd speed rpm : 650
Rack travel in m: 12.30...12.40
3rd speed rpm : 1000
Rack travel in m: 12.20...12.30

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm3/ : 113.5...116.5
1000 s: (111.0...119.0)
Spread cm3 : 5.00
1000 s: (7.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.00
Speed rpm : 1190...1205

F02

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...155.0
1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm3/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 13,4D18
 Edition : 28.06.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 548 038
 Injection pump
 Pump designation : PE8MW100/720LS1128
 EP type number : 0 413 508 103
 Governor
 Governor design. : RQ300/1200MW71-1
 Governor no. : 0 420 082 060

Customer-spec. information
 Customer : KHD

Engine : BF8L513

1st version kW : 172.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.90...12.00

Del.quantity cm³/ : 10.7...10.9

100 s: (10.5...11.1)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1150

travel mm : 6.40...6.60

2nd speed rpm : 1200

travel mm : 9.50...10.40

3rd speed rpm : 800

travel mm : 5.80...6.20

4th speed rpm : 300

travel mm : 1.70...2.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 107.0...109.0

1000 : (105.0...111.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 27...35

Setting point:
Speed rpm : 650
Rack travel in mm : 20.0

Testing:
1st rack travel in: 10.90
Speed rpm : 1240...1155
2nd rack travel in: 4.00
Speed rpm : 1325...1355
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:
Speed rpm : 200
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60

START CUT-OUT

Speed 1/min : 220 (250)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.90
Speed rpm : 1240...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...155.0
1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

FD4

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 5,9 h
Edition : 24.06.91
Replaces : 21.5.87
Test oil : ISO-4113

Combination no. : 9 400 085 270

Injection pump
Pump designation : PES6A90D320RS2718
EP type number : 9 400 084 003
Governor
Governor design. : RSV350...1400A2B2215
-1R
Governor no. : 9 420 083 231

Customer-spec. information
Customer : MWM

Engine : D229/6

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 046

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80
: (2.65...2.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 8.50...8.60

Del.quantity cm3/ : 6.1...6.2

100 s: (5.9...6.4)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 350

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 61.5...62.5

1000 : (59.5...64.5)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 55...63

Testing:

1st rack travel in: 7.50
Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1475...1505
4th rack travel in: 1650
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 21...29
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 560...620

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 8.50...8.60
2nd speed rpm : 500
Rack travel in m: 9.10...9.20
4th speed rpm : 900
Rack travel in m: 8.80...9.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 56.0...58.0
1000 s: (53.5...60.5)
Speed rpm : 900
Del.quantity cm3/ : 64.0...66.0
1000 s: (61.5...68.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.50
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350

F06

Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 11.0...15.0
1000 s: (9.0...17.0)
Spread cm3 : 2.50
1000 s: (4.50)

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 5,5 R10
Edition : 16.07.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F1900R393
Type number : 0 460 414 078
Customer Part-No. :

Customer-specific information
Customer : SOFIM

Engine : 8140.47.2700

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0,5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 1.40...1.80
Shutoff
electromagnet Volt: 12

F07

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 5.20...5.80
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1800
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 60.50...61.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 550
Del. quantity cm3/
1000S.: 24.50...25.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 11.00...15.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2100
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 40.00...46.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...70.00
mind 1000S.: 40.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery: Inj.-qty.dif.measurement:

Speed 1/min: 1100
Charge press hPa: 1000

Inj.-qty. cm³/
 difference 1000S.: -21.70...23.70
 Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1100
 Charge press hPa: 1000
 TD-travel
 difference mm: -0.70...0.90
 Shutoff
 electromagnet Volt: 12
 SP press.-dif.measurement
 pompa di mandata (FP)
 1.Speed 1/min: 1100
 Charge press hPa: 1000
 Supply pump
 pressure
 difference bar: -0,10...0.30
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

3rd speed 1/min: 1100
 Charge press hPa: 1000
 TD travel mm: 1.40...1.80
 mm: (0.90...2.30)

Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 1900
 Charge press. hPa: 1000
 TD travel mm: 5.40...6.20
 mm: (5.40...6.20)

Shutoff
 electromagnet Volt: 12
 6th speed 1/min: 1500
 Charge press. hPa: 1000
 TD travel mm: 3.20...4.00
 mm: (2.90...4.30)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 5.20...5.80
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1900
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 7.60...8.20
 Shutoff
 electromagnet Volt: 12

4th speed 1/min: 1500
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 6.50...7.10
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 550
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700*
 Charge-air pressure-setting
 point hPa: 500
 LDA-stroke mm: 6,0
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 49.00...50.00
 1000S.: (45.50...53.50)

2nd speed 1/min: 2300
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...5.00
 1000S.: (0.00...5.00)

3rd speed 1/min: 2200
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 19.00...27.00
 1000S.: (17.00...29.00)

5th speed 1/min: 2100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...46.00
 1000S.: (38.50...47.50)

9th speed 1/min: 1900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 58.00...63.00
 1000S.: (57.00...64.00)

12th speed 1/min: 1800
 Charge press. hPa: 1000

Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 60.50...61.50
 1000S.: (57.50...64.50)
 15th speed 1/min: 1400
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 56.00...61.00
 1000S.: (54.50...62.50)
 17th speed 1/min: 1100
 Charge press. hPa: 1000
 Shutoff
 electromagnet volt: 12
 Del. quantity cm3/: 55.00...60.00
 1000H.: (53.50...61.50)
 18th speed 1/min: 550
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 24.50...25.50
 1000S.: (21.50...28.50)
 20th speed 1/min: 550
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 58.50...67.50
 1000S.: (57.50...68.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 375
 Del. quantity cm3/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 11.00...15.00
 1000S.: (9.00...17.00)

Dispersion cm3/: 6.0
 1000S.: (6.5)

2nd speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 0.00...5.00
 1000S.: (0.00...5.00)

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

2nd speed 1/min: 1100
 Charge press. hPa: 1000

Inj.-qty. cm3/: 21.70...23.70
 difference 1000S.: -

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1100
 Charge press. hPa: 1000
 Inj.-qty. cm3/: 25.50...33.50
 difference 1000S.: -

Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 1100
 Charge press. hPa: 1000
 Inj.-qty. cm3/: 2.00...8.00
 difference 1000S.: -

Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1100
 Charge press. hPa: 1000
 TD-travel : 0.70...0.90
 difference mm: -

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1100
 Charge press. hPa: 1000
 TD-travel : 0.40...1.20
 difference mm: -

2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply pump-
 pressure : 0.10...0.30
 difference bar: -

Shutoff
 electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 300
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 40.00...80.00
 1000S.: (40.00...80.00)

2nd speed 1/min: 400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 10.00...40.00
 1000S.: (10.00...40.00)

4th speed 1/min: 100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 40.00...70.00
 1000S.: (40.00...70.00)

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3,2...3,4
KF	mm: K-OT
MS	mm: 0,8...1,2
SVS max.	mm: 3,0
LDA stroke	mm: 6,0
XK	mm: 20,0...22,0
XL	mm: 13,1...16,5

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 5,6 P10
Edition : 16.07.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/11F1350R55-12
Type number : 0 460 416 066
Customer Part-No. :

Customer-specific information
Customer : MAN

Engine : D 0226 MF/125

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,55
(from BDC): +0,02(0,04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 5.80...6.20
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000

F11

Setting value bar: 5.10...5.70

Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 1000
Del. quantity cm3/
1000S.: 63.50...64.50

Shutoff
electromagnet Volt: 24
Dispersion cm3/: 3.5
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm3/
1000S.: 7.00...13.00

Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 3.0
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1400
Del. quantity cm3/
1000S.: 45.00...51.00

Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 50.00...70.00
mind 1000S.: 50.00

Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1350
TD travel mm: 8.00...8.80
mm: (7.70...9.10)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1000
TD travel mm: 5.80...6.20
mm: (5.30...6.70)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 600
TD travel mm: 2.80...3.60
mm: (2.50...3.90)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump pressure bar: 3.70...4.30
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1000
Supply-pump pressure bar: 5.10...5.70
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1350
Supply-pump pressure bar: 6.20...6.80
Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 24
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1350
Shutoff
electromagnet Volt: 24
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1475
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...15.00
1000S.: (0.00...15.00)
3rd speed 1/min: 1550
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
5th speed 1/min: 1400
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 45.00...51.00
1000S.: (43.50...52.50)
8th speed 1/min: 1425
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 15.00...45.00
1000S.: (15.00...45.00)
9th speed 1/min: 1350
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 68.50...71.50
1000S.: (67.00...73.00)

11th speed 1/min: 700

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 49.50...53.50
1000S.: (48.00...55.00)

12th speed 1/min: 1000

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 63.50...64.50
1000S.: (61.50...66.50)

20th speed 1/min: 600

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 40.00...44.00
1000S.: (38.50...45.50)

Mech. shutoff:

Mech. Abstellung:

1st speed 1/min: 1350

Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff

electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 300

Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff

electromagnet volt: -

Idle delivery:

1st speed 1/min: 300

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 7.00...13.00
1000S.: (5.00...15.00)

Dispersion cm³/: 3.0
1000S.: (3.5)

2nd speed 1/min: 450

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 47.00...63.00
1000S.: (47.00...63.00)

2nd speed 1/min: 400

Shutoff
electromagnet Volt: 24

Del. quantity cm³/: 38.00...50.00
1000S.: (38.00...50.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 24

Del. quantity cm³/: 50.00...70.00
1000S.: (50.00...70.00)

Shutoff electromagnet:

Cut-in

min voltage : 20.0

Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5,6...6,0
MS	mm: 1,1...1,5
SVS max.	mm: 2,3
XK	mm: 17.0...19.0
XL	mm: 10.9...14.3

Remarks:

: MAN NR. 7941
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 D7
Edition : 16.07.91
replaces : 11.86
Calibrating oil : ISO-4113

Injection pump : VE4/12F1250R230
Type number : 0 460 424 026
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 4 BT- 390 AUTOM.

Power KW: 77
Speed 1/min: 2800

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 1,66
mm: +0,02(0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 1.80...2.20
AFB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 4.70...5.30
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 900
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 69.50...70.50
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 36.50...37.50
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

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Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 8.00...14.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1500
Charge press hPa: 1000

Del. quantity cm³/
1000S.: 54.00...60.00

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 40.00...120.00
mind 1000S.: 40.00

KSB/AFB
Valve Volt: 12
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1400
Charge press hPa: 1000
TD travel mm: 2.90...3.70
mm: (2.60...4.00)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 1.80...2.20
mm: (1.30...2.70)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
4th speed 1/min: 900
Charge press hPa: 1000
TD travel mm: 0.40...1.00
mm: (0.00...1.40)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 2.10...2.70

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press. hPa: 1000

Supply-pump
pressure bar: 4.70...5.30

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

4th speed 1/min: 1400

Charge press. hPa: 1000

Supply-pump
pressure bar: 5.90...6.50
bar: (5.70...6.70)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)

2nd speed 1/min: 1400
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700*
Charge-air pressure-setting
point hPa: 400
LDA-stroke mm: 6.0

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 67.00...68.00
1000S.: (63.50...71.50)

2nd speed 1/min: 1650
Charge press. hPa: 1000

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

5th speed 1/min: 1500
Charge press. hPa: 1000

KSB/AFB
valve Volt: 12

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 54.00...60.00
 1000S.: (51.00...63.00)
 6th speed 1/min: 1590
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 15.00...55.00
 1000S.: (15.00...55.00)
 9th speed 1/min: 1400
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 64.50...67.50
 1000S.: (63.00...69.00)
 12th speed 1/min: 900
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 69.50...70.50
 1000S.: (67.00...73.00)
 18th speed 1/min: 500
 Charge press. hPa: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 36.50...37.50
 1000S.: (33.00...41.00)

Mech. shutoff:
 Mech. Abstimmung:

1st speed 1/min: 1400
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: 12
 KSB/AFB
 valve Volt: 12

Electr. shutoff:

1st speed 1/min: 375
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 8.00...14.00
 1000S.: (6.00...16.00)
 Dispersion cm³/: 5.5
 1000S.: (7.0)
 2nd speed 1/min: 600
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...4.00
 1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 150
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...120.00
 1000S.: (40.00...120.00)

2nd speed 1/min: 380
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...40.00
 1000S.: (0.00...40.00)

4th speed 1/min: 100
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...120.00
 1000S.: (40.00...120.00)

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
 K mm: -
 KF mm: 5,0...5,4
 MS mm: 0,9...1,2
 SVS max. mm: 2,7
 LDA stroke mm: 6.0
 XK mm: 18.8...20.8
 XL mm: 9.8...13.2

Remarks:

: C.D.C. # 390 8182
:

* Correction at adjusting nut (46)

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 D
Edition : 16.07.91
replaces : 11.86
Calibrating oil : ISO-4113

Injection pump : VE4/12F1250R230-1
Type number : 0 460 424 027
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 4 BT- 390 AUTOM.

Power KW: 77
Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 1,66
mm: +0,02(0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 1.80...2.20
AFB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 4,70...5.30
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 900
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 69.50...70.50
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000S.: 36.50...37.50
KSB/AFB 11
valve Volt: 12
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 340
Del. quantity cm³/
1000S.: 8.00...14.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1330
Charge press hPa: 1000

Del. quantity cm³/
1000S.: 54.00...60.00

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 40.00...120.00
mind 1000S.: 40.00

KSB/AFB
Valve Volt: 12

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1200
Charge press hPa: 1000
TD travel mm: 2.90...3.70
mm: (2.60...4.00)

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 1.80...2.20
mm: (1.30...2.70)

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12

4th speed 1/min: 900
Charge press hPa: 1000
TD travel mm: 0.30...1.10
mm: (0.00...1.40)

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
TD travel mm: 0.00...6.40
mm: (0.00...1.00)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 2.10...2.70

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.70...5.30

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.40...6.00

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)

2nd speed 1/min: 1250
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700*
Charge-air pressure-setting
point hPa: 400
LDA-stroke mm: 6.0

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 67.00...68.00
1000S.: (63.50...71.50)

2nd speed 1/min: 1500
Charge press. hPa: 1000

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

5th speed 1/min: 1330

Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 54.00...60.00
 1000S.: (51.00...63.00)
 6th speed 1/min: 1430
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 15.00...55.00
 1000S.: (15.00...55.00)
 9th speed 1/min: 1250
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 64.50...67.50
 1000S.: (63.00...69.00)
 12th speed 1/min: 900
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 69.50...70.50
 1000S.: (67.00...73.00)
 18th speed 1/min: 500
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 36.50...37.50
 1000S.: (33.00...41.00)

Mech. shutoff:
 Mech. Abstellung:

1st speed 1/min: 1250
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: 12
 KSB/AFB
 valve Volt: 12

Electr. shutoff:

1st speed 1/min: 340
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 340
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 8.00...14.00
 1000S.: (6.00...16.00)
 Dispersion cm³/: 5.5
 1000S.: (7.0)
 2nd speed 1/min: 500
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...4.00
 1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 150
 KSB/AFB
 valve Volt: 12
 Timing valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...120.00
 1000S.: (40.00...120.00)

2nd speed 1/min: 380
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...40.00
 1000S.: (0.00...40.00)

4th speed 1/min: 100
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...120.00
 1000S.: (40.00...120.00)

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
 K mm: -
 KF mm: 5,0...5,4
 MS mm: 0,9...1,1
 SVS max. mm: 2,7
 LDA stroke mm: 6,0
 XK mm: 18,8...20,8
 XL mm: 8,4...11,8

Remarks:

: C.D.C. # 390 8191

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 D2
Edition : 16.07.91
replaces : 11.12.86
Calibrating oil : ISO-4113

Injection pump : VE4/12F1250R231
Type number : 0 460 424 028
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 4 BTA 3.9 AUTO

Power KW: 88
Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 1,55
mm: +0,02(0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 850
Charge press. hPa: 1000
Setting value mm: 4.00...4.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 850
Charge press hPa: 1000
Setting value bar: 5.60...6.20
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 85.50...86.50

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 63.50...64.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 365
Del. quantity cm3/
1000S.: 8.00...14.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1310
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 61.00...67.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 70.00...140.00
mind 1000S.: 70.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 4.90...5.70
mm: (4.60...6.00)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 850
Charge press hPa: 1000
TD travel mm: 4.00...4.40
mm: (3.50...4.90)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
Charge press hPa: 1000
TD travel mm: 1.80...2.60
mm: (1.50...2.90)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 4.00...4.60

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 850
Charge press. hPa: 1000
Supply-pump pressure bar: 5.60...6.20

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 6.70...7.30

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(26.70...98.40)

2nd speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12

Overflow quantity cm³/10s: 55.60...139.00
(40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700*
Charge-air pressure-setting point hPa: 350
LDA-stroke mm: 6,6
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 79.50...80.50
1000S.: (76.00...84.00)

2nd speed 1/min: 1420
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 1400
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...15.00
1000S.: (0.00...15.00)

4th speed 1/min: 1360
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...55.00
1000S.: (15.00...55.00)

5th speed 1/min: 1310
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 61.00...67.00
1000S.: (58.00...70.00)

9th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 75.50...78.50
1000S.: (74.00...80.00)

10th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 77.50...80.50
1000S.: (75.50...82.50)

12th speed 1/min: 850
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 85.50...86.50
1000S.: (83.00...89.00)

18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 63.50...64.50
1000S.: (60.00...68.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 365
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 365
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.00...14.00
1000S.: (6.00...16.00)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70.00...140.00
1000S.: (70.00...140.00)

2nd speed 1/min: 230
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...60.00
1000S.: (20.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70.00...140.00
1000S.: (70.00...140.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5,0...5,4
MS	mm: 1,0...1,4
SVS max.	mm: 2,6
LDA stroke	mm: 6,6
XK	mm: 20,2...22,2
XL	mm: 13,1...16,6

Remarks:

: C.D.C. # 390 8195

:
Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 C
Edition : 16.07.91
replaces : 11.86
Calibrating oil : ISO-4113

Injection pump : VE4/12F1150R231-1
Type number : 0 460 424 029
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 4 BTA 3.9 IND.

Power KW: 82
Speed 1/min: 2300

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 1,55
mm: +0,02(0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

F25

Timing-device travel

Speed 1/min: 850
Charge press. hPa: 1000
Setting value mm: 4.00...4.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 850
Charge press hPa: 1000
Setting value bar: 5.60...6.20
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 85.50...86.50

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 63.50...64.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 8.00...14.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1220
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 62.50...68.50

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...130.00
mind 1000S.: 60.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1150
Charge press hPa: 1000
TD travel mm: 5.20...6.00
mm: (4.90...6.30)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 850
Charge press hPa: 1000
TD travel mm: 4.00...4.40
mm: (3.50...4.90)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
Charge press hPa: 1000
TD travel mm: 1.80...2.60
mm: (1.50...2.90)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 4.00...4.60

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 850
Charge press. hPa: 1000
Supply-pump pressure bar: 5.60...6.20

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1150
Charge press. hPa: 1000
Supply-pump pressure bar: 6.90...7.50

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)

2nd speed 1/min: 1150
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12

Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700*
Charge-air pressure-setting point hPa: 350
LDA-stroke mm: 6,6
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 79.50...80.50
1000s.: (76.00...84.00)

2nd speed 1/min: 1320
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

4th speed 1/min: 1260
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...55.00
1000s.: (15.00...55.00)

5th speed 1/min: 1220
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 62.50...68.50
1000s.: (59.50...71.50)

9th speed 1/min: 1150
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 76.00...79.00
1000s.: (74.50...80.50)

10th speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 79.50...82.50
1000s.: (77.50...84.50)

12th speed 1/min: 850
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 85.50...86.50
1000s.: (83.00...89.00)

18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 63.50...64.50
1000s.: (60.00...68.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1150
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.00...14.00
1000S.: (6.00...16.00)
Dispersion cm³/: 5.5
1000S.: (7.0)
2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...130.00
1000S.: (60.00...130.00)

2nd speed 1/min: 230
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...60.00
1000S.: (20.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...130.00
1000S.: (60.00...130.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5,1...5,3

F27

MS mm: 1,1..1,35
SVS max. mm: 2,6
LDA stroke mm: 6,6
XK mm: 18,8...20,8
XL mm: 12,4...15,8

Remarks:

: C.D.C. # 390 9590

:
Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 D1
Edition : 16.07.91
replaces : 11.12.86
Calibrating oil : ISO-4113

Injection pump : VE4/12F1050R230-3
Type number : 0 460 424 033
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 4 BTA-390 IND

Power KW: 79
Speed 1/min: 2100

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): +0,02(0,04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
Charge press. hPa: 1000

Setting value mm: 3.40...3.80
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750
Charge press hPa: 1000
Setting value bar: 5.00...5.60
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 900
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 83.00...84.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 63.50...64.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 8.00...14.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1100
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 59.00...65.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...120.00
mind 1000S.: 60.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1050
 Charge press hPa: 1000
 TD travel mm: 4.70...5.50
 mm: (4.40...5.80)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 750
 Charge press hPa: 1000
 TD travel mm: 3.40...3.80
 mm: (2.90...4.30)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 500
 Charge press hPa: 1000
 TD travel mm: 1.70...2.50
 mm: (1.40...2.80)

Shutoff
 electromagnet Volt: 12
 TD travel mm: 0.00...6.40
 mm: (0.00...1.00)

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Charge press. hPa: 1000
 Supply-pump pressure bar: 3.90...4.50

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 750
 Charge press. hPa: 1000
 Supply-pump pressure bar: 5.00...5.60

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1050
 Charge press. hPa: 1000
 Supply-pump pressure bar: 6.30...6.90
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1050
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 55.60...139.00
 quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700*
 Charge-air pressure-setting point hPa: 350
 LDA-stroke mm: 6,8
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 79.50...80.50
 1000s.: (76.00...84.00)

2nd speed 1/min: 1120
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 20.00...50.00
 1000s.: (20.00...50.00)

4th speed 1/min: 1180
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)

5th speed 1/min: 1100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 59.00...65.00
 1000s.: (56.00...68.00)

9th speed 1/min: 1050
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 76.50...79.50
 1000s.: (75.00...81.00)

12th speed 1/min: 900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 83.00...84.00
 1000s.: (80.50...86.50)

18th speed 1/min: 500
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 63.50...64.50
 1000s.: (60.00...68.00)

Mech. shutoff: Mech. Abstellung:

1st speed 1/min: 1050
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)

Shutoff
 electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375

Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 8.00...14.00
1000S.: (6.00...16.00)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 450

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 60.00...120.00
1000S.: (60.00...120.00)

2nd speed 1/min: 230

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 10.00...50.00
1000S.: (10.00...50.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 60.00...120.00
1000S.: (60.00...120.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: 5,1...5,4

MS mm: 1,1...1,35

SVS max. mm: 2,2

XK mm: 20.2...22.2

XL mm: 11.9...15.3

Remarks:

: C.D.C. # 390 9592

:

Operate control lever after each

G02

manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 4,0 B
Edition : 16.07.91
replaces : 08.11.88
Calibrating oil : ISO-4113

Injection pump : VE4/12F1400R279
Type number : 0 460 424 036
Customer Part-No. :

Customer-specific information
Customer : PERKINS

Engine : NA 4.40 LKW

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 950
Setting value mm: 2.30...2.70
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 950
Setting value bar: 5.40...6.00
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 800
Del. quantity cm3/
1000S.: 75.50...76.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.5
1000S.: (3.5)

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm3/
1000S.: 19.50...23.50
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1600
Del. quantity cm3/
1000S.: 17.00...23.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 90.00...120.00
mind 1000S.: 90.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1400
TD travel mm: 2.90...3.70
mm: (2.60...4.00)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 950
TD travel mm: 2.30...2.70
mm: (1.80...3.20)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 800

TD travel mm: 0.50...1.10
 mm: (0.10...1.50)
 Shutoff
 electromagnet Volt: 12
 Supply-pump pressure characteristic:
 1st speed 1/min: 800
 Supply-pump pressure bar: 4.80...5.40
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 950
 Supply-pump pressure bar: 5.40...6.00
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1400
 Supply-pump pressure bar: 7.20...7.80
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 500
 Supply-pump pressure bar: 3.40...4.00
 Shutoff
 electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 41.70...83.40
 (26.70...98.40)
 2nd speed 1/min: 1400
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 55.60...139.00
 (40.60...154.00)
 Delivery-quant. and breakaway char.:
 3rd speed 1/min: 1660
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 5th speed 1/min: 1600
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 17.00...23.00
 1000s.: (15.00...26.00)
 8th speed 1/min: 1500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 53.00...61.00
 1000s.: (52.00...62.00)
 9th speed 1/min: 1400

G04

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 69.00...72.00
 1000s.: (67.50...73.50)
 11th speed 1/min: 1100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 74.80...77.20
 1000s.: (73.00...79.00)
 12th speed 1/min: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 75.50...76.50
 1000s.: (73.00...79.00)
 20th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 65.50...68.50
 1000s.: (64.00...70.00)
 Mech. shutoff:
 Mech. Abstimmung:
 1st speed 1/min: 1400
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 Shutoff
 electromagnet volt: 12
 Electr. shutoff:
 1st speed 1/min: 300
 Del. quantity cm³: 0.00...3.00
 1000s.: (0.00...3.00)
 Shutoff
 electromagnet volt: -
 Idle delivery:
 1st speed 1/min: 300
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 19.50...23.50
 1000s.: (16.50...26.50)
 Dispersion cm³: 3.5
 1000s.: (3.5)
 2nd speed 1/min: 350
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 14.50...20.50
 1000s.: (12.50...22.50)
 4th speed 1/min: 400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 5.00...12.00
 1000s.: (4.50...12.50)
 Automatic starting fuel delivery:
 1st speed 1/min: 150

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 100.00...130.00
1000S.: (100.00...130.00)

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...65.00
1000S.: (35.00...65.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 90.00...120.00
1000S.: (90.00...120.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation	
K	mm: 3,2...3,4
KF	mm: K-OT
MS	mm: 1,1...1,5
XK	mm: 17,0...19,0
XL	mm: 9,6...13,0

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS 3,9 M3
Edition : 16.07.91
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/12F1100R310
Type number : 0 460 424 042
Customer Part-No. :

Customer-specific information
Customer : CASE

Engine : 4BT-3.9

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 1,8
mm: +0,02(0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
Charge press. hPa: 1000
Setting value mm: 2.10...2.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750
Charge press hPa: 1000
Setting value bar: 4.20...4.80
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 72.00...73.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 45.50...46.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm3/
1000S.: 8.50...14.50

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1170
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 47.00...53.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...120.00
mind 1000S.: 60.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 900
Charge press hPa: 1000
TD travel mm: 2.80...3.60
mm: (2.50...3.90)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 750
Charge press hPa: 1000
TD travel mm: 2.10...2.50
mm: (1.60...3.00)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 600
Charge press hPa: 1000
TD travel mm: 0.80...1.60
mm: (0.50...1.90)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.10...3.70

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 750
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.20...4.80

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.80...6.40

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700*
Charge-air pressure-setting
point hPa: 325
LDA-stroke mm: 6,5
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 68.50...69.50
1000S.: (65.00...73.00)

2nd speed 1/min: 1280
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 1230
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...15.00
1000S.: (0.00...15.00)

4th speed 1/min: 1180
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 15.00...55.00
1000S.: (15.00...55.00)

5th speed 1/min: 1170
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 47.00...53.00
1000S.: (44.00...56.00)

9th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 62.00...65.00
1000S.: (60.50...66.50)

10th speed 1/min: 900
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 63.50...68.50
1000S.: (62.00...70.00)

12th speed 1/min: 750
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 72.00...73.00
1000S.: (69.50...75.50)

18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 45.50...46.50
1000S.: (42.00...50.00)

Mech. shutoff:
Mech. Abststellung:

1st speed 1/min: 1100
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 450
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.50...14.50
1000S.: (6.50...16.50)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

3rd speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...38.00
1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 55.00...115.00
1000S.: (55.00...115.00)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...65.00
1000S.: (15.00...65.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...120.00
1000S.: (60.00...120.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5,0...5,4
MS	mm: 1,2...1,6
SVS max.	mm: 2,5
XK	mm: 18,8...20,8
XL	mm: 11,7...15,1

Remarks:

: C.D.C. # 391 1190
Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS 3,9L
Edition : 16.07.91
replaces : 31.01.89
Calibrating oil : ISO-4113

Injection pump : VE4/12F1100R310-1
Type number : 0 460 424 043
Customer Part-No. :

Customer-specific information
Customer : CASE

Engine : 4 TA 390 /66KW

Power KW: 66
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 1,55
mm: +0,02(0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
Setting value mm: 3.20...3.60
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750
Setting value bar: 4.30...4.90
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
Del. quantity cm³/
1000S.: 85.00...86.00
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm³/
1000S.: 10.00...16.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1155
Del. quantity cm³/
1000S.: 50.00...58.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 70.00...120.00
mind 1000S.: 70.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 4.80...5.60
mm: (4.50...5.90)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 750
 TD travel mm: 3.20...3.60
 mm: (2.70...4.10)
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 500
 TD travel mm: 1.60...2.40
 mm: (1.30...2.70)
 Shutoff
 electromagnet Volt: 12
 Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump pressure bar: 3.20...3.80
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 750
 Supply-pump pressure bar: 4.30...4.90
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 Supply-pump pressure bar: 5.80...6.40
 Shutoff
 electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1100
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...154.40)
 Delivery-quant. and breakaway char.:
 2nd speed 1/min: 1215
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 1170
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 10.00...60.00
 1000S.: (10.00...60.00)
 Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 1155

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 50.00...58.00
 1000S.: (46.00...62.00)
 9th speed 1/min: 1100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 68.00...71.00
 1000S.: (66.50...72.50)
 10th speed 1/min: 900
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 75.00...78.00
 1000S.: (73.00...80.00)
 12th speed 1/min: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 85.00...86.00
 1000S.: (82.50...88.50)
 20th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 85.00...93.00
 1000S.: (83.00...95.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 10.00...16.00
 1000S.: (8.00...18.00)

Dispersion cm³/: 5.5
 1000S.: (7.0)

2nd speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...4.00
 1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 250
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 85.00...135.00
 1000S.: (85.00...135.00)

2nd speed 1/min: 450

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 70.00...100.00
1000S.: (70.00...100.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 70.00...120.00
1000S.: (70.00...120.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5,0...5,4
MS	mm: 0,8...1,2
SVS max.	mm: 1,3
XK	mm: 18,1...20,8
XL	mm: 9,9...13,3

Remarks:
: C.D.C. # 391 2111
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 P16
Edition : 16.07.91
replaces : 23.04.90
Calibrating oil : ISO-4113

Injection pump : VE4/12F1250R359-1
Type number : 0 460 424 055
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 4 BT- 390 AUTOM.

Power KW: 77
Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 1,0
mm: +0,02(0,06)

Outlet : A

Injection-pump setting values

Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 1.90...2.30
AFB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 5.40...6.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 73.00...74.00

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 43.50...44.50

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 7.50...11.50

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1340

Charge press hPa: 1000
Del. quantity cm³/
1000S.: 54.00...60.00

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/
mind 1000S.: 90.00...170.00
KSB/AFB
Valve Volt: 12
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1250
Charge press hPa: 1000
TD travel mm: 2.90...3.70
mm: (2.60...4.00)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 1.90...2.30
mm: (1.40...2.80)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
4th speed 1/min: 900
Charge press hPa: 1000
TD travel mm: 0.70...1.50
mm: (0.40...1.80)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
8th speed 1/min: 400*
Charge press. hPa: -
TD travel mm: 2.70...3.70
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000

Supply-pump
pressure bar: 2.70...3.30

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 900
Charge press. hPa: 1000

Supply-pump
pressure bar: 4.40...5.00

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press. hPa: 1000

Supply-pump
pressure bar: 5.40...6.00

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1250
Charge press. hPa: 1000

Supply-pump
pressure bar: 6.00...6.60

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1250
Charge press. hPa: 1000

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700*
Charge-air pressure-setting
point hPa: 600
LDA-stroke mm: 6,4
KSB/AFB
valve Volt: 12

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 71.00...72.00
 1000S.: (67.50...75.50)
 2nd speed 1/min: 1500
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 1400
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 15.00...55.00
 1000S.: (15.00...55.00)
 5th speed 1/min: 1340
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 54.00...60.00
 1000S.: (51.00...63.00)
 9th speed 1/min: 1250
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 68.50...71.50
 1000S.: (67.00...73.00)
 12th speed 1/min: 850
 Charge press. hPa: 1000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quynity cm³/: 73.00...74.00
 1000S.: (70.50...76.50)
 18th speed 1/min: 500
 Charge press. hPa: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 43.50...44.50
 1000S.: (40.00...48.00)

 Mech. shutoff:
 Mech. Abstellung:

 1st speed 1/min: 1250
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: 12
 KSB/AFB
 valve Volt: 12

 Electr. shutoff:

 1st speed 1/min: 350
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: -

 Idle delivery:

 1st speed 1/min: 350
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 7.50...11.50
 1000S.: (4.50...14.50)
 Dispersion cm³/: 5.5
 1000S.: (7.0)
 2nd speed 1/min: 400
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...6.00
 1000S.: (0.00...6.00)

 Automatic starting fuel delivery:

 1st speed 1/min: 150
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 80.00...160.00
 1000S.: (80.00...160.00)

 2nd speed 1/min: 280
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...80.00
 1000S.: (0.00...80.00)

 4th speed 1/min: 100
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 90.00...170.00
 1000S.: (90.00...170.00)

 Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3,6...3,8
KF	mm: K-OT
MS	mm: 1,3...1,7
SVS max.	mm: 2,7
LDA stroke	mm: 6,4
XK	mm: 21,8...23,8
XL	mm: 11,7...15,1

Operate control lever after each
manifold-pressure compensator pressure
change. : C.D.C. # 391 1242

* Correction at adjusting nut (46)

Overflow restriction 0.55 mm - Part No.
..303

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

* Unscrew KSB ball valve 2 mm

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 P26
Edition : 16.07.91
replaces : 21.06.90
Calibrating oil : ISO-4113

Injection pump : VE4/12F1000R378-1
Type number : 0 460 424 059
Customer Part-No. :

Customer-specific information
Customer : CASE

Engine : 4 BTA 3.9 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50,00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm: 1,8
mm: $\pm 0,02(0,06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
Setting value mm: 2.40...2.80
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 900
Setting value bar: 4.00...4.60
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 900
Del. quantity cm³/
1000S.: 69.00...70.00
Shutoff
electromagnet Volt: 24
Dispersion cm³/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm³/
1000S.: 7.00...13.00
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1050
Del. quantity cm³/
1000S.: 37.50...43.50
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm³/: 70.00...110.00
mind 1000S.: 70.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1000
TD travel mm: 2.70...3.50
mm: (2.40...3.80)
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 900

TD travel mm: 2.40...2.80
 mm: (1.90...3.30)
 Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 750
 TD travel mm: 1.30...2.10
 mm: (1.00...2.40)
 Shutoff
 electromagnet Volt: 24
 Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump pressure bar: 2.20...2.80
 Shutoff
 electromagnet Volt: 24
 2nd speed 1/min: 900
 Supply-pump pressure bar: 4.00...4.60
 Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 1000
 Supply-pump pressure bar: 4.40...5.00
 Shutoff
 electromagnet Volt: 24
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1000
 Shutoff
 electromagnet Volt: 24
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...154.00)
 Delivery-quant. and breakaway char.:
 2nd speed 1/min: 1130
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 1070
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 15.00...45.00
 1000S.: (15.00...45.00)
 5th speed 1/min: 1050
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 37.50...43.50
 1000S.: (34.50...46.50)
 9th speed 1/min: 1000

Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 67.00...70.00
 1000S.: (65.50...71.50)
 10th speed 1/min: 750
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 72.50...75.50
 1000S.: (70.50...77.50)
 12th speed 1/min: 900
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 69.00...70.00
 1000S.: (66.50...71.50)
 20th speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 71.50...79.50
 1000S.: (69.50...81.50)

Mech. shutoff:
 Mech. Abststellung:

1st speed 1/min: 1000
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 450
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 450
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 7.00...13.00
 1000S.: (5.00...15.00)

Dispersion cm³/: 5.5
 1000S.: (7.0)

2nd speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...4.00
 1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 95.00...135.00
 1000S.: (95.00...135.00)

2nd speed 1/min: 240
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 55.00...85.00
1000S.: (55.00...85.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 70.00...110.00
1000S.: (70.00...110.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5,0...5,4
MS mm: 1,1...1,5
SVS max. mm: 3,0

Remarks:
: C.D.C. # 391 7027

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 P40
Edition : 12.07.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1250R378-2
Type number : 0 460 424 060
Customer Part-No. : 3 917 029

Customer-specific information
Customer : CDC

Engine : 4 BT 3.9
Speed 1/min: 1250

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50,00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 1,8
mm: +0,02(0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
Setting value mm: 2.00...2.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900
Setting value bar: 4.60...5.20
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1100
Del. quantity cm3/
1000S.: 57.50...58.50

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 335
Del. quantity cm3/
1000S.: 8.00...14.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1300
Del. quantity cm3/
1000S.: 40.00...46.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 70.00...120.00
mind 1000S.: 70.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 2.90...3.70
mm: (2.60...4.00)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 900

TD travel mm: 2.00...2.40
 mm: (1.50...2.90)
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 750
 TD travel mm: 0.80...1.60
 mm: (0.50...1.90)
 Shutoff
 electromagnet Volt: 12
 Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump pressure bar: 2.70...3.30
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 900
 Supply-pump pressure bar: 4.60...5.20
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 Supply-pump pressure bar: 5.40...6.00
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 750
 Supply-pump pressure bar: 3.90...4.50
 Shutoff
 electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm3/10s: (26.70...98.40)
 2nd speed 1/min: 1250
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm3/10s: (40.60...154.00)
 Delivery-quant. and breakaway char.:
 2nd speed 1/min: 1460
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 1330
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 15.00...55.00
 1000S.: (15.00...55.00)

Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 1300
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 40.00...46.00
 1000S.: (37.00...49.00)
 9th speed 1/min: 1250
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 55.50...58.50
 1000S.: (54.00...60.00)
 11th speed 1/min: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 55.50...59.50
 1000S.: (53.50...61.50)
 12th speed 1/min: 1100
 Shutoff
 electromagnet Volt: 12
 Del. quynity cm3/: 57.50...58.50
 1000S.: (55.00...61.00)
 20th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 49.00...57.00
 1000S.: (47.00...59.00)
 Mech. shutoff:
 Mech. Abststellung:
 1st speed 1/min: 1250
 Del. quantity cm3/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: 12
 Electr. shutoff:
 1st speed 1/min: 335
 Del. quantity cm3/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: -
 Idle delivery:
 1st speed 1/min: 335
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 8.00...14.00
 1000S.: (6.00...16.00)
 Dispersion cm3/: 5.5
 1000S.: (7.0)
 2nd speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 0.00...4.00
 1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 75.00...125.00
1000S.: (75.00...125.00)

2nd speed 1/min: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 40.00...80.00
1000S.: (40.00...80.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 70.00...120.00
1000S.: (70.00...120.00)

Shutoff electromagnet:

Cut-in

min voltage : 10,0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: 5,0...5,4

MS mm: 0,8...1,2

SVS max. mm: 4,8

Remarks:

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N27
Edition : 12.07.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1100R378-4
Type number : 0 460 424 062
Customer Part-No. : 3 917 032

Customer-specific information
Customer : CDC

Engine : 4 BT 3.9 IND.

Power KW: 59
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50,00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm: 1,8
mm: $\pm 0,02(0,06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
Setting value mm: 2.30...2.70
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900
Setting value bar: 4.10...4.70
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 900
Del. quantity cm³/
1000S.: 58.50...59.50
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 8.00...14.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1150
Del. quantity cm³/
1000S.: 45.00...51.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 110
Del. quantity cm³/: 50.00...100.00
mind 1000S.: 50.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 3.10...3.90
mm: (2.80...4.20)
Shutoff
electromagnet Volt: 12

3rd speed 1/min: 900
TD travel mm: 2.30...2.70
mm: (1.80...3.20)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 750
TD travel mm: 1.30...2.10
mm: (1.00...2.40)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump pressure bar: 2.30...2.90

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 900
Supply-pump pressure bar: 4.10...4.70

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Supply-pump pressure bar: 4.90...5.50
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1100
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1170
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...55.00
1000S.: (15.00...55.00)
5th speed 1/min: 1150
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...51.00
1000S.: (42.00...54.00)

9th speed 1/min: 1100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 58.00...61.00
1000S.: (56.50...62.50)

11th speed 1/min: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 57.50...61.50
1000S.: (55.50...63.50)

12th speed 1/min: 900
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 58.50...59.50
1000S.: (56.00...62.00)

20th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...58.00
1000S.: (48.00...60.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1100
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.00...14.00
1000S.: (6.00...16.00)
Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 80.00...120.00
1000S.: (80.00...120.00)

2nd speed 1/min: 240
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...80.00
1000S.: (40.00...80.00)

4th speed 1/min: 110
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...100.00
1000S.: (50.00...100.00)

Shutoff electromagnet:

Cut-in
min voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5,0...5,4
MS	mm: 1,1...1,5
SVS max.	mm: 3,2

Remarks:

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BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N24
Edition : 12.07.91
replaces : 31.10.90
Calibrating oil : ISO-4113

Injection pump : VE4/12F1100R378-4
Type number : 0 460 424 062
Customer Part-No. : 3 917 554

Customer-specific information
Customer : CDC

Engine : 4 BT 3.9 IND.

Power KW: 68
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 1,8
mm: +0,02(0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
Setting value mm: 2.30...2.70
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900
Setting value bar: 4.10...4.70
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 900
Del. quantity cm3/
1000S.: 68.00...69.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm3/
1000S.: 9.00...15.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1160
Del. quantity cm3/
1000S.: 34.00...71.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 70.00...120.00
mind 1000S.: 70.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 3.10...3.90
mm: (2.80...4.20)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 900
 TD travel mm: 2.30...2.70
 mm: (1.80...3.20)
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 750
 TD travel mm: 1.30...2.10
 mm: (1.00...2.40)
 Shutoff
 electromagnet Volt: 12
 Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump pressure bar: 2.30...2.90
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 900
 Supply-pump pressure bar: 4.10...4.70
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 Supply-pump pressure bar: 4.90...5.50
 Shutoff
 electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1100
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...154.00)
 Delivery-quant. and breakaway char.:
 2nd speed 1/min: 1230
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 1175
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 32.50...37.50
 1000S.: (30.00...40.00)
 5th speed 1/min: 1160
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 34.00...71.00
 1000S.: -
 9th speed 1/min: 1100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 65.50...68.50
 1000S.: (64.00...70.00)
 11th speed 1/min: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 70.00...74.00
 1000S.: (68.00...76.00)
 12th speed 1/min: 900
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 68.00...69.00
 1000S.: (65.50...71.50)
 20th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 70.00...78.00
 1000S.: (68.00...80.00)
 Mech. shutoff:
 Mech. Abstimmung:
 1st speed 1/min: 1100
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: 12
 Electr. shutoff:
 1st speed 1/min: 450
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: -
 Idle delivery:
 1st speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 9.00...15.00
 1000S.: (7.00...17.00)
 Dispersion cm³/: 5.5
 1000S.: (7.0)
 2nd speed 1/min: 530
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Automatic starting fuel delivery:
 1st speed 1/min: 130
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 80.00...120.00
1000S.: (80.00...120.00)

2nd speed 1/min: 240

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 40.00...80.00
1000S.: (40.00...80.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 70.00...120.00
1000S.: (70.00...120.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: 5,0...5,4

MS mm: 1,1...1,5

SVS max. mm: 3,5

Remarks:

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N26
Edition : 12.07.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1100R378-4
Type number : 0 460 424 062
Customer Part-No. : 3 917 555

Customer-specific information
Customer : CDC

Engine : 4 BT 3.9 IND.

Power KW: 68
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 1,8
mm: +0,02(0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
Setting value mm: 2.30...2.70
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 900
Setting value bar: 4.10...4.70
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 900
Del. quantity cm3/
1000S.: 68.00...69.00
Shutoff
electromagnet Volt: 24
Dispersion cm3/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm3/
1000S.: 9.00...15.00
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1160
Del. quantity cm3/
1000S.: 34.00...71.00
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 70.00...120.00
mind 1000S.: 70.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 3.10...3.90
mm: (2.80...4.20)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 900
TD travel mm: 2.30...2.70
mm: (1.80...3.20)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 750
TD travel mm: 1.30...2.10
mm: (1.00...2.40)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2.30...2.90

Shutoff
electromagnet Volt: 24
2nd speed 1/min: 900
Supply-pump
pressure bar: 4.10...4.70

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1100
Supply-pump
pressure bar: 4.90...5.50
Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 24
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1100
Shutoff
electromagnet Volt: 24
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1230
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1175
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 32.50...37.50
1000S.: (30.00...40.00)
5th speed 1/min: 1160
Shutoff
electromagnet Volt: 24

Del. quantity cm³/: 34.00...71.00
1000S.: -

9th speed 1/min: 1100

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 65.50...68.50
1000S.: (64.00...70.00)

11th speed 1/min: 750

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 70.00...74.00
1000S.: (68.00...76.00)

12th speed 1/min: 900

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 68.00...69.00
1000S.: (65.50...71.50)

20th speed 1/min: 500

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 70.00...78.00
1000S.: (68.00...80.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1100
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 450
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 9.00...15.00
1000S.: (7.00...17.00)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 530

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24

Del. quantity cm³/: 80.00...120.00
1000S.: (80.00...120.00)

2nd speed 1/min: 240

Shutoff

electromagnet Volt: 24

Del. quantity cm³/: 40.00...80.00
1000S.: (40.00...80.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 24

Del. quantity cm³/: 70.00...120.00
1000S.: (70.00...120.00)

Shutoff electromagnet:

Cut-in

min voltage : 20.0

Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: 5,0...5,4

MS mm: 1,1...1,5

SVS max. mm: 3,5

Remarks:

:
Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 P4
Edition : 16.07.91
replaces : 28.03.90
Calibrating oil : ISO-4113

Injection pump : VE4/12F1150R374-1
Type number : 0 460 424 063
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 4 BTA 3.9 IND.

Power KW: 82
Speed 1/min: 2300

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 1,55
mm: +0,02(0,06)

Outlet : A

Injection-pump setting values

H03

Test specifications in parentheses

Timing-device travel

Speed 1/min: 850
Charge press. hPa: 1000
Setting value mm: 4.00...4.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 850
Charge press hPa: 1000
Setting value bar: 5.60...6.20
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 85.50...86.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 63.50...64.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 8.00...14.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1220
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 62.50...68.50
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm³/: 60.00...130.00
mind 1000S.: 60.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1150
Charge press hPa: 1000
TD travel mm: 5.20...6.00
mm: (4.90...6.30)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 850
Charge press hPa: 1000
TD travel mm: 4.00...4.40
mm: (3.50...4.90)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
Charge press hPa: 1000
TD travel mm: 1.80...2.60
mm: (1.50...2.90)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.00...4.60

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 850
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.60...6.20

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1150
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.90...7.50

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1150
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700*
Charge-air pressure-setting
point hPa: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 79.50...80.50
1000S.: (76.00...84.00)

2nd speed 1/min: 1320
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 1260
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...55.00
1000S.: (15.00...55.00)

5th speed 1/min: 1220
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 62.50...68.50
1000S.: (59.50...71.50)

9th speed 1/min: 1150
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 76.00...79.00
1000S.: (74.50...80.50)

10th speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 79.50...82.50
1000S.: (77.50...84.50)

12th speed 1/min: 850
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 85.50...86.50
1000S.: (83.00...89.00)

18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 63.50...64.50
1000S.: (60.00...68.00)

Mech. shutoff:
Mech. Abstimmung:

1st speed 1/min: 1150
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

KSB/AFB
valve Volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.00...14.00
1000S.: (6.00...16.00)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...130.00
1000S.: (60.00...130.00)

2nd speed 1/min: 230
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...60.00
1000S.: (20.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...130.00
1000S.: (60.00...130.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -

H05

KF mm: 5,0...5,4
MS mm: 1,0...1,4
SVS max. mm: 2,6

Remarks:
: C.D.C. # 391 7519

Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N31
Edition : 15.07.91
replaces : 18.01.90
Calibrating oil : ISO-4113

Injection pump : VE4/12F1050R389
Type number : 0 460 424 065
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 4 BT- 390 AUTOM.

Power KW: 81
Speed 1/min: 2100

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 1.55
mm: +0,02(0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

H06

Timing-device travel

Speed 1/min: 750
Charge press. hPa: 1000
Setting value mm: 3.40...3.80
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750
Charge press hPa: 1000
Setting value bar: 5,0...5,6
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 89.50...90.50
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000S.: 63.50...64.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 8.00...14.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1100
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 59.00...65.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 60.00...140.00
mind 1000S.: 60.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1050
Charge press hPa: 1000
TD travel mm: 4.70...5.50
mm: (4.40...5.80)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 750
Charge press hPa: 1000
TD travel mm: 3.40...3.80
mm: (2.90...4.30)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
Charge press hPa: 1000
TD travel mm: 1.70...2.50
mm: (1.40...2.80)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 3.90...4.50

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 750
Charge press. hPa: 1000
Supply-pump pressure bar: 5.00...5.60

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1050
Charge press. hPa: 1000
Supply-pump pressure bar: 6.30...6.90

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(26.70...98.40)
2nd speed 1/min: 1050
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12

Overflow quantity cm³/10s: 55.60...139.00
(40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700*
Charge-air pressure-setting point hPa: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s: 79.50...80.50
(76.00...84.00)

2nd speed 1/min: 1180
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s: 0.00...3.00
(0.00...3.00)

5th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s: 59.00...65.00
(56.00...68.00)

6th speed 1/min: 1120
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s: 15.00...55.00
(15.00...55.00)

9th speed 1/min: 1050
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s: 76.50...79.50
(75.00...81.00)

12th speed 1/min: 750
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s: 89.50...90.50
(87.00...93.00)

18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s: 63.50...64.50
(60.00...68.00)

Mech. shutoff:
Mech. Abststellung:

1st speed 1/min: 1050
Charge press. hPa: 1000
Del. quantity cm³/1000s: 0.00...3.00
(0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.00...14.00
1000S.: (6.00...16.00)
Dispersion cm³/: 5.5
1000S.: (7.0)
2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...140.00
1000S.: (60.00...140.00)

2nd speed 1/min: 230
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...60.00
1000S.: (20.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...140.00
1000S.: (60.00...140.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5,0...5,4
MS	mm: 1,0...1,4
SVS max.	mm: 2,2

Remarks:

: C.D.C. # 391 7516
:

Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS 3,9 M
Edition : 15.07.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1100R391
Type number : 0 460 424 068
Customer Part-No. :

Customer-specific information
Customer : CASE

Engine : 4 TA 390 /66KW

Power KW: 66
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): 0,02(0,04)

Start of delivery block
Piston stroke mm: 1,55
mm: +0,02(0,06)

Outlet : A

Injection-pump setting values

H09

Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
Charge press. hPa: 1000
Setting value mm: 3.30...3.70
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750
Charge press hPa: 1000
Setting value bar: 4.50...5.10
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 83.50...84.50
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000S.: 63.00...64.00
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm³/
1000S.: 8.50...14.50
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1170
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 36.50...42.50
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm3/: 50.00...100.00
mind 1000S.: 50.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 4.50...5.30
mm: (4.20...5.60)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 750
Charge press hPa: 1000
TD travel mm: 3.30...3.70
mm: (2.80...4.20)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
Charge press hPa: 1000
TD travel mm: 1.60...2.40
mm: (1.30...2.70)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.40...4.00

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 750
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.50...5.10

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.90...6.50
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 1100
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 650*
Charge-air pressure-setting
point hPa: 325
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 77.50...78.50
1000S.: (74.00...82.00)

2nd speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 1190
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 15.00...45.00
1000S.: (15.00...45.00)

5th speed 1/min: 1170
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 36.50...42.50
1000S.: (33.50...45.50)

9th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 67.00...70.00
1000S.: (65.50...71.50)

10th speed 1/min: 900
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 73.50...77.50
1000S.: (72.00...79.00)

12th speed 1/min: 750
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quynity cm3/: 83.50...84.50
1000S.: (81.00...87.00)

18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 63.00...64.00
1000S.: (60.00...67.00)

20th speed 1/min: 500
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 84.00...92.00
1000S.: (82.00...94.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Idle delivery:

1st speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.50...14.50
1000S.: (6.50...16.50)
Dispersion cm³/: 5.5
1000S.: (7.0)
2nd speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 75.00...135.00
1000S.: (75.00...135.00)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...75.00
1000S.: (45.00...75.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...100.00
1000S.: (50.00...100.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -

H11

KF mm: 5,0...5,4
MS mm: 0,8...1,2
SVS max. mm: 1,3

Remarks:
Operate control lever after each 26
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

Overflow restriction 0.55 mm - Part No.
..303

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS 3,9 M1
Edition : 15.07.91
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/12F1100R391-1
Type number : 0 460 424 072
Customer Part-No. :

Customer-specific information
Customer : CASE

Engine : 4BT-3.9

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 1,8
mm: +0,02(0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
Charge press. hPa: 1000
Setting value mm: 2.10...2.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750
Charge press hPa: 1000
Setting value bar: 4.20...4.80
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 72.00...73.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 45.50...46.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 8.50...14.50
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1170
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 47.00...53.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...120.00
mind 1000S.: 60.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 900
Charge press hPa: 1000
TD travel mm: 2.80...3.60
mm: (2.50...3.90)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 750
Charge press hPa: 1000
TD travel mm: 2.10...2.50
mm: (1.60...3.00)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 600
Charge press hPa: 1000
TD travel mm: 0.80...1.60
mm: (0.50...1.90)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 3.10...3.70

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 750
Charge press. hPa: 1000
Supply-pump pressure bar: 4.20...4.80

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 5.80...6.40

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Overflow quantity cm3/10s: 41.70...83.40
(26.70...98.40)

2nd speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow quantity cm3/10s: 55.60...139.00
(40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700*
Charge-air pressure-setting point hPa: 325
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 68.50...69.50
1000S.: (65.00...73.00)

2nd speed 1/min: 1280
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
Del. quantity cm3/: 0.00...15.00
1000S.: (0.00...15.00)

4th speed 1/min: 1180
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 15.00...55.00
1000S.: (15.00...55.00)

5th speed 1/min: 1170
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 47.00...53.00
1000S.: (44.00...56.00)

9th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 62.00...65.00
1000S.: (60.50...66.50)

10th speed 1/min: 900
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 63.50...68.50
1000S.: (62.00...70.00)

12th speed 1/min: 750
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quynity cm3/: 72.00...73.00
1000S.: (69.50...75,50)

18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 45.50...46.50
1000S.: (42.00...50.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1100

Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.50...14.50
1000S.: (6.50...16.50)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 55.00...115.00
1000S.: (55.00...115.00)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...65.00
1000S.: (15.00...65.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...120.00
1000S.: (60.00...120.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -
KF mm: 5,0...5,4
MS mm: 1,2...1,6

H14

SVS max. mm: 2,5

Remarks:

: CASE # 391 7014
Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 P43
Edition : 15.07.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1100R378-7
Type number : 0 460 424 074
Customer Part-No. :

Customer-specific information
Customer : CASE

Engine : 4 BT-390

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 2,35
mm: +0,02(0,06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
Setting value mm: 2.30...2.70
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900
Setting value bar: 4.10...4.70
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
Del. quantity cm³/
1000S.: 63.50...64.50
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 475
Del. quantity cm³/
1000S.: 6.00...12.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1160
Del. quantity cm³/
1000S.: 31.50...38.50
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 70.00...120.00
mind 1000S.: 70.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 3.10...3.90
mm: (2.80...4.20)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 900

TD travel mm: 2.30...2.70
mm: (1.80...3.20)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 650
TD travel mm: 0.70...1.50
mm: (0.40...1.80)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2.40...3.00
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 900
Supply-pump
pressure bar: 4.10...4.70
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Supply-pump
pressure bar: 4.90...5.50
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1100
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1180
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...40.00
1000S.: (10.00...40.00)
5th speed 1/min: 1160
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 31.50...38.50
1000S.: (29.00...41.00)
9th speed 1/min: 1100

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.50...63.50
1000S.: (59.00...65.00)

10th speed 1/min: 900
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.80...63.80
1000S.: (58.80...65.80)

12th speed 1/min: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 63.50...64.50
1000S.: (61.00...67.00)

20th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 61.00...69.00
1000S.: (59.00...71.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1100
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 475
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 475
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 6.00...12.00
1000S.: (4.00...14.00)
Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70.00...130.00
1000S.: (70.00...130.00)

2nd speed 1/min: 240
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...70.00
1000S.: (30.00...70.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70.00...120.00
1000S.: (70.00...120.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: K-OT
MS	mm: 1,2...1,6
SVS max.	mm: 3,2

Remarks:

: C.D.C. # 391 7528
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 3,6 N
Edition : 15.07.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1350R407
Type number : 0 460 424 075
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT

Engine : 8040.25.4000 TC

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 1.40...1.80

Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 5.70...6.30
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 78.50...79.50

Shutoff
electromagnet Volt: 24
Dispersion cm3/: 3.5
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
1000S.: 50.50...51.50

Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 250
Del. quantity cm3/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 3.5
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1525
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 30.00...36.00

Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...110.00
mind 1000S.: 60.00

Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
 Charge press hPa: 1000
 TD travel mm: 2.20...3.00
 mm: (1.70...3.50)

Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 1000
 Charge press hPa: 1000
 TD travel mm: 1.40...1.80
 mm: (0.70...2.50)

5th speed 1/min: 1350
 Charge press. hPa: 1000
 TD travel mm: 3.70...4.50
 mm: (3.20...5.00)

Shutoff
 electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Charge press. hPa: 1000
 Supply-pump pressure bar: 3.70...4.30

Shutoff
 electromagnet Volt: 24
 2nd speed 1/min: 1000
 Charge press. hPa: 1000
 Supply-pump pressure bar: 5.70...6.30

Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 1350
 Charge press. hPa: 1000
 Supply-pump pressure bar: 7.50...8.10

Shutoff
 electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)

2nd speed 1/min: 1350
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 600*

Charge-air pressure-setting point hPa: 375

LDA-stroke mm: 6,7

Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 69.00...70.00
 1000S.: (65.50...73.50)

2nd speed 1/min: 1600
 Charge press. hPa: 1000

Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

5th speed 1/min: 1525
 Charge press. hPa: 1000

Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 30.00...36.00
 1000S.: (27.00...39.00)

8th speed 1/min: 1475
 Charge press. hPa: 1000

Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 43.00...51.00
 1000S.: (41.00...53.00)

9th speed 1/min: 1350
 Charge press. hPa: 1000

Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 68.50...71.50
 1000S.: (66.50...73.50)

10th speed 1/min: 1200
 Charge press. hPa: 1000

Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 71.00...75.00
 1000S.: (69.50...76.50)

12th speed 1/min: 700
 Charge press. hPa: 1000

Shutoff
 electromagnet Volt: 24
 Del. quynity cm³/: 79.00...80.00
 1000S.: (76.00...83.00)

18th speed 1/min: 600
 Charge press. hPa: -

Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 51.50...52.50
 1000S.: (48.50...55.50)

20th speed 1/min: 600
 Charge press. hPa: 1000

Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 82.50...86.50
 1000S.: (81.00...88.00)

21th speed 1/min: 500
 Charge press. hPa: -

Shutoff
 electromagnet Volt: 24

Del. quantity cm³/: 50.00...54.00
1000S.: (48.00...56.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1350
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 250
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 250
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 13.00...17.00
1000S.: (10.00...20.00)

Dispersion cm³/: 3.5
1000S.: (5.0)

2nd speed 1/min: 375
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 60.00...110.00
1000S.: (60.00...110.00)

2nd speed 1/min: 230
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 45.00...65.00
1000S.: (45.00...65.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 60.00...110.00
1000S.: (60.00...110.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0

H2O

Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: 3,7
KF	mm: K-OT
MS	mm: 0,7...1,1
LDA stroke	mm: 6,7

Operate control lever after each
manifold-pressure compensator pressure
change. :

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 3,6 N1
Edition : 15.07.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1350R407-1
Type number : 0 460 424 076
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT

Engine : 8040.45.4000 TCA

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 1.90...2.30

Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 5.80...6.40
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 72.00...73.00

Shutoff
electromagnet Volt: 24
Dispersion cm3/: 3.5
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
1000S.: 42.50...43.50

Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 250
Del. quantity cm3/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 3.5
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1525
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 23.00...29.00

Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...110.00
mind 1000S.: 60.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
 Charge press hPa: 1000
 TD travel mm: 2.20...3.00
 mm: (1.70...3.50)

Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 1000
 Charge press hPa: 1000
 TD travel mm: 1.40...1.80
 mm: (0.70...2.50)

Shutoff
 electromagnet Volt: 24
 5th speed 1/min: 1350
 Charge press. hPa: 1000
 TD travel mm: 3.70...4.50
 mm: (3.20...5.00)

Shutoff
 electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Charge press. hPa: 1000
 Supply-pump pressure bar: 4.10...4.70
 Shutoff

electromagnet Volt: 24
 2nd speed 1/min: 1000
 Charge press. hPa: 1000
 Supply-pump pressure bar: 5.80...6.40
 Shutoff

electromagnet Volt: 24
 3rd speed 1/min: 1350
 Charge press. hPa: 1000
 Supply-pump pressure bar: 7.20...7.80
 Shutoff

electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Overflow : 104.25...145.95
 quantity cm³/10s: (89.25...160.95)

2nd speed 1/min: 1350
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Overflow : 111.20...194.60
 quantity cm³/10s: (96.20...209.60)

Delivery-quant. and breakaway char.:

1st speed 1/min: 600*
 Charge-air pressure-setting point hPa: 510
 LDA-stroke mm: 6,9
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 62.00...63.00
 1000S.: (58.50...66.50)

2nd speed 1/min: 1600
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

5th speed 1/min: 1525
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 30.00...36.00
 1000S.: (27.00...39.00)

8th speed 1/min: 1450
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 49.00...57.00
 1000S.: (47.00...59.00)

9th speed 1/min: 1350
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 63.00...66.00
 1000S.: (61.00...68.00)

10th speed 1/min: 1200
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 64.50...68.50
 1000S.: (63.00...70.00)

12th speed 1/min: 700
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quynntity cm³/: 72.00...73.00
 1000S.: (69.00...76.00)

18th speed 1/min: 600
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 42.50...43.50
 1000S.: (39.50...46.50)

20th speed 1/min: 600
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 74.50...78.50
 1000S.: (73.00...80.00)

21th speed 1/min: 500
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 24

Del. quantity cm³/: 41.00...45.00
1000S.: (39.00...47.00)

Mech. shutoff:
Mech. Abstimmung:

1st speed 1/min: 1350
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 250
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 250
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 13.00...17.00
1000S.: (10.00...20.00)

Dispersion cm³/: 3.5
1000S.: (5.0)

2nd speed 1/min: 375
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 60.00...110.00
1000S.: (60.00...110.00)

2nd speed 1/min: 230
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 30.00...50.00
1000S.: (45.00...65.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 60.00...110.00
1000S.: (60.00...110.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation
K mm: 3,7
KF mm: K-OT
MS mm: 0,7...1,1
LDA stroke mm: 6,9

Remarks:

:
Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 P35
Edition : 15.07.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1050R389-2
Type number : 0 460 424 078
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 4 BT- 390 AUTOM.

Power KW: 78
Speed 1/min: 2100

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm: 1,55
mm: $\pm 0,02(0,06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

H24

Timing-device travel

Speed 1/min: 750
Charge press. hPa: 1000
Setting value mm: 3.40...3.80
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 750
Charge press hPa: 1000
Setting value bar: 5.00...5.60
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 750
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 89.50...90.50
Shutoff
electromagnet Volt: 24
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000S.: 63.50...64.50
Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 8.00...14.00
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1100
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 59.00...65.00
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm³/: 60.00...140.00
mind 1000S.: 60.00

Shutoff

electromagnet Volt: 24

Inspection-pump test specifications

Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1050
Charge press hPa: 1000
TD travel mm: 4.70...5.50
mm: (4.40...5.80)

Shutoff

electromagnet Volt: 24

3rd speed 1/min: 750

Charge press hPa: 1000

TD travel mm: 3.40...3.80
mm: (2.90...4.30)

Shutoff

electromagnet Volt: 24

4th speed 1/min: 500

Charge press hPa: 1000

TD travel mm: 1.70...2.50
mm: (1.40...2.80)

Shutoff

electromagnet Volt: 24

TD travel mm: 0.00...6.40
mm: (0.00...1.00)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 3.90...4.50

Shutoff

electromagnet Volt: 24

3rd speed 1/min: 750

Charge press. hPa: 1000

Supply-pump pressure bar: 5.00...5.60

Shutoff

electromagnet Volt: 24

4th speed 1/min: 1050

Charge press. hPa: 1000

Supply-pump pressure bar: 6.30...6.90

Shutoff

electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 1050
Charge press. hPa: 1000

Shutoff

electromagnet Volt: 24

Overflow : 55.60...139.00

quantity cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700*
Charge-air pressure-setting point hPa: 350

Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 79.50...80.50
1000S.: (76.00...84.00)

2nd speed 1/min: 1180

Charge press. hPa: 1000

Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 1120

Charge press. hPa: 1000

Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 15.00...55.00
1000S.: (15.00...55.00)

5th speed 1/min: 1100

Charge press. hPa: 1000

Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 59.00...65.00
1000S.: (56.00...68.00)

9th speed 1/min: 1050

Charge press. hPa: 1000

Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 76.50...79.50
1000S.: (75.00...81.00)

12th speed 1/min: 750

Charge press. hPa: 1000

Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 89.50...90.50
1000S.: (87.00...93.00)

18th speed 1/min: 500

Charge press. hPa: -

Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 63.50...64.50
1000S.: (60.00...68.00)

Mech. shutoff:

Mech. Abstellung:

1st speed 1/min: 1050
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff

electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 8.00...14.00
1000S.: (6.00...16.00)
Dispersion cm³/: 5.5
1000S.: (7.0)
2nd speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 60.00...140.00
1000S.: (60.00...140.00)

2nd speed 1/min: 230
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 20.00...60.00
1000S.: (20.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 60.00...140.00
1000S.: (60.00...140.00)

Shutoff electromagnet:

Cut-in
min voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K mm: -
KF mm: 5,0...5,4
MS mm: 1,0...1,4
SVS max. mm: 2,2

Remarks:

: C.D.C. # 391 7517

:
Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 P36
Edition : 15.07.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/12F1100R374-3
Type number : 0 460 424 080
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 4 BTA 3.9

Power KW: 80
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0,5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 1,55
mm: +0,02(0,06)

Outlet : A

Injection-pump setting values

H27

Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
Charge press. hPa: 1000
Setting value mm: 3.80...4.20
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750
Charge press hPa: 1000
Setting value bar: 5.10...5.70
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 85.50...86.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 63.50...64.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 8.00...14.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1145
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 65.00...71.00

KSB/AFB
valve Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm³/: 65.00...105.00
mind 1000s.: 65.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 5.20...6.00
mm: (4.90...6.30)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 750
Charge press hPa: 1000
TD travel mm: 3.80...4.20
mm: (3.30...4.70)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
Charge press hPa: 1000
TD travel mm: 2.10...2.90
mm: (1.80...3.20)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.00...4.60

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 750
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.10...5.70

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.70...7.30
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1100
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700*
Charge-air pressure-setting
point hPa: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 81.50...82.50
1000s.: (78.00...86.00)

2nd speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

3rd speed 1/min: 1180
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...55.00
1000s.: (15.00...55.00)

5th speed 1/min: 1145
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 65.00...71.00
1000s.: (62.00...74.00)

9th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 76.00...79.00
1000s.: (74.50...80.50)

10th speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 78.50...81.50
1000s.: (76.50...83.50)

12th speed 1/min: 850
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 85.50...86.50
1000s.: (83.00...89.00)

18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 63.50...64.50
1000s.: (60.00...68.00)

Mech. shutoff:
Mech. Abstimmung:

1st speed 1/min: 1100
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.00...14.00
1000S.: (6.00...16.00)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 455
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 65.00...125.00
1000S.: (65.00...125.00)

2nd speed 1/min: 240
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...65.00
1000S.: (35.00...65.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 65.00...105.00
1000S.: (65.00...105.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -

J01

KF mm: 5,0...5,4
MS mm: 1,0...1,4
SVS max. mm: 2,4
XK mm: 21.8...23.8
XL mm: 11.4...14.8

Remarks:

: C.D.C. # 391 7020
Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N30
Edition : 12.07.91
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE4/12F1100R378-8
Type number : 0 460 424 081

Customer-specific information
Customer : CDC

Engine : 4 BT

Power KW: 67
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.0...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0,30...0,40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253,00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm: 1,8
mm: $\pm 0,02(0,06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

J02

Speed 1/min: 900
Setting value mm: 2,3...2,7
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900
Setting value bar: 4,1...4,7
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 900
Del. quantity cm³/
1000S.: 68,0...69.0

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4,0
1000S.: (4,5)

Low-idle speed regulation

Speed 1/min: 475
Del. quantity cm³/
1000S.: 10,5...16,5

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 5,5
1000S.: (7,0)

Full-load speed regulation

Speed 1/min: 1175
Del. quantity cm³/
1000S.: 32,5...37,5

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: -
mind 1000S.: 65,0

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
TD travel mm: 1,3...2,1
mm: (1,0...2,4)

electromagnet Volt: 12
2nd speed 1/min: 900

TD travel mm: 2,3...2,7
mm: (1,8...3,2)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
TD travel mm: 3,4...4,1
mm: (3,0...4,4)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump pressure bar: 2,3...2,9
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 900
Supply-pump pressure bar: 4,1...4,7
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Supply-pump pressure bar: 4,9...5,5
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1100
Shutoff
electromagnet Volt: 12
Overflow : 55...138
quantity cm³/10s: (40...154)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1230
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0,0...3,0
1000S.: -
2nd speed 1/min: 1175
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 32,5...37,5
1000S.: (30,0...40,0)
3rd speed 1/min: 1160
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34,0...71,0
1000S.: -
4th speed 1/min: 1100
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 65,5...68,5
1000S.: (64,0...70,0)

5th speed 1/min: 900
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 68,0...69,0
1000S.: (65,5...71,5)

6th speed 1/min: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70,0...74,0
1000S.: (68,0...76,0)

7th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70,0...78,0
1000S.: (68,0...80,0)

Mech. shutoff:
Mech. Abst. ellung:

1st speed 1/min: 1100
Del. quantity cm³/: 0,0...3,0
1000S.: -

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 475
Del. quantity cm³/: 0,0...3,0
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 475
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10,5...16,5
1000S.: (8,5...18,5)
2nd speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0,0...3,0
1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 80,0...120,0
1000S.: -

2nd speed 1/min: 240
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40,0...80,0
1000S.: -

Shutoff electromagnet:

Cut-in

min voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: 5,0...5,4

MS mm: 1,1...1,5

SVS max. mm: 3,2

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 R
Edition : 15.07.91
replaces : 10.85
Calibrating oil : ISO-4113

Injection pump : VE6/12F1325R198
Type number : 0 460 426 063
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 6 BT 5.9 IND.

Power KW: 97
Speed 1/min: 2650

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 1,5
mm: +0,02(0,06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 850
Setting value mm: 3.90...4.30
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 850
Setting value bar: 3.90...4.50
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 1100
Del. quantity cm3/
1000S.: 56.00...57.00
Shutoff
electromagnet Volt: 24
Dispersion cm3/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 8.00...14.00
Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1400
Del. quantity cm3/
1000S.: 36.00...42.00
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...110.00
mind 1000S.: 60.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 5.90...6.70
mm: (5.60...7.00)

Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 850
 TD travel mm: 3.90...4.30
 mm: (3.40...4.80)
 Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 500
 TD travel mm: 1.30...2.10
 mm: (1.00...2.40)
 Shutoff
 electromagnet Volt: 24
 Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump
 pressure bar: 2.50...3.10
 Shutoff
 electromagnet Volt: 24
 2nd speed 1/min: 850
 Supply-pump
 pressure bar: 3.90...4.50
 Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 1100
 Supply-pump
 pressure bar: 4.90...5.50
 Shutoff
 electromagnet Volt: 24
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1325
 Shutoff
 electromagnet Volt: 24
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...154.00)
 Delivery-quant. and breakaway char.:
 2nd speed 1/min: 1520
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 4th speed 1/min: 1440
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 15.00...45.00
 1000S.: (15.00...45.00)
 5th speed 1/min: 1400
 Shutoff
 electromagnet Volt: 24

Del. quantity cm³/: 36.00...42.00
 1000S.: (33.00...45.00)
 9th speed 1/min: 1325
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 52.50...55.50
 1000S.: (51.00...57.00)
 11th speed 1/min: 850
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 53.50...57.50
 1000S.: (51.50...59.50)
 12th speed 1/min: 1100
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 56.00...57.00
 1000S.: (53.50...59.50)
 20th speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 38.50...46.50
 1000S.: (36.50...48.50)
 Mech. shutoff:
 Mech. Abstimmung:
 1st speed 1/min: 1325
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: 24
 Electr. shutoff:
 1st speed 1/min: 375
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: -
 Idle delivery:
 1st speed 1/min: 375
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 8.00...14.00
 1000S.: (6.00...16.00)
 Dispersion cm³/: 5.5
 1000S.: (7.0)
 2nd speed 1/min: 450
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...4.00
 1000S.: -
 Automatic starting fuel delivery:
 1st speed 1/min: 130
 Shutoff
 electromagnet Volt: 24

Del. quantity cm³/: 65.00...115.00
1000S.: (65.00...115.00)

2nd speed 1/min: 250

Shutoff

electromagnet Volt: 24

Del. quantity cm³/: 15.00...65.00
1000S.: (15.00...65.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 24

Del. quantity cm³/: 60.00...110.00
1000S.: (60.00...110.00)

Shutoff electromagnet:

Cut-in

min voltage : 20.0

Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: 5,0...5,4

MS mm: 1,3...1,7

XK mm: 20,2...22,2

XL mm: 9,1...12,5

Remarks:

: C.D.C. # 390 8217

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 6,0 C
Edition : 15.07.91
replaces : 06.11.89
Calibrating oil : ISO-4113

Injection pump : VE6/12F1300R240
Type number : 0 460 426 084
Customer Part-No. :

Customer-specific information
Customer : PERKINS

Engine : T6 60 cc Truck

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,25
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 1,0
mm: +0,02(0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 1.30...1.70
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 6.50...7.10
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 99.00...100.00

Shutoff
electromagnet Volt: 24
Dispersion cm³/
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm³/
1000S.: 87.00...88.00

Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm³/
1000S.: 16.50...20.50

Shutoff
electromagnet Volt: 24
Del. quantity cm³/
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1450
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 47.00...53.00

Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm³/
mind 1000S.: 120.0
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1300
Charge press hPa: 1000
TD travel mm: 2.00...2.80
mm: (1.70...3.10)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 1.30...1.70
mm: (0.80...2.20)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 0.40...1.20
mm: (0.00...1.40)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 1300
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.30...7.90
Shutoff

electromagnet Volt: 24
2nd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.50...7.10
Shutoff

electromagnet Volt: 24
3rd speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.90...4.50
Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700*
Charge-air pressure-setting
point hPa: 400
LDA-stroke mm: 6,3
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 95.00...96.00
1000S.: (92.50...98.50)

2nd speed 1/min: 1520
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 13.50...21.50
1000S.: (10.50...24.50)

3rd speed 1/min: 1580
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...7.00
1000S.: (0.00...7.00)

5th speed 1/min: 1450
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 47.00...53.00
1000S.: (44.00...56.00)

9th speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 95.00...98.00
1000S.: (93.50...99.50)

10th speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 99.50...102.50
1000S.: (98.00...104.00)

12th speed 1/min: 700
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quynity cm³/: 99.00...100.00
1000S.: (96.50...102,50)

18th speed 1/min: 700
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 87.00...88.00
1000S.: (84.50...90.50)

20th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 81.00...82.00
1000S.: (78,5...84,50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1300
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 300
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 16.50...20.50
1000S.: (13.50...23.50)

Dispersion cm³/: 5.0
1000S.: (5.0)

2nd speed 1/min: 350

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 4.50...10.50
1000S.: (2.50...12.50)

4th speed 1/min: 400

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...2.60
1000S.: (0.00...2.60)

Automatic starting fuel delivery:

1st speed 1/min: 150
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 120.00...160.00
1000S.: (95.00...145.00)

2nd speed 1/min: 230

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 35.00...85.00
1000S.: (35.00...85.00)

4th speed 1/min: 100

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 120.00...160.00
1000S.: (120.00...160.00)

Shutoff electromagnet:

Cut-in
min voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: K-OT
MS	mm: 0,6...1,0
SVS max.	mm: 3,2
LDA stroke	mm: 6,3
XK	mm: 17,0...19,0
XL	mm: 12,8...16,2

Remarks:

:
Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 6,0 A
Edition : 15.07.91
replaces : 18.04.88
Calibrating oil : ISO-4113

Injection pump : VE6/12F1300R241
Type number : 0 460 426 085
Customer Part-No. :

Customer-specific information
Customer : PERKINS

Engine : T6 60

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0,6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): +0,02(0,04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 2.10...2.50
Shutoff
electromagnet Volt: 12

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Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 7.20...7.80
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 92.00...93.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.5
1000S.: (3.5)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000S.: 77.50...80.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 13.00...17.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1400
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 52.00...58.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 90.00...130.00
mind 1000S.: 90.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1300
 Charge press hPa: 1000
 TD travel mm: 2.90...3.70
 mm: (2.60...4.00)
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 Charge press hPa: 1000
 TD travel mm: 2.10...2.50
 mm: (1.60...3.00)
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 950
 Charge press hPa: 1000
 TD travel mm: 0.50...1.10
 mm: (0.10...1.50)
 Shutoff
 electromagnet Volt: 12
 Supply-pump pressure characteristic:
 1st speed 1/min: 1300
 Charge press. hPa: 1000
 Supply-pump pressure bar: 8.00...8.60
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump pressure bar: 7.20...7.80
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 700
 Charge press. hPa: 1000
 Supply-pump pressure bar: 5.50...6.10
 Shutoff
 electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm3/10s: (26.70...98.40)
 2nd speed 1/min: 1300
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm3/10s: (40.60...154.00)
 Delivery-quant. and breakaway char.:
 1st speed 1/min: 700*

Charge-air pressure-setting
 point hPa: 350
 LDA-stroke mm: 6,1
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 83.50...84.50
 1000S.: (81.00...87.00)
 2nd speed 1/min: 1480
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 8.00...16.00
 1000S.: (5.00...19.00)
 3rd speed 1/min: 1530
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 0.00...3.00
 1000S.: (0.00...3.00)
 5th speed 1/min: 1400
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 52.00...58.00
 1000S.: (49.00...61.00)
 9th speed 1/min: 1300
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 84.50...87.50
 1000S.: (83.00...89.00)
 10th speed 1/min: 700
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 90.00...93.00
 1000S.: (88.50...94.50)
 12th speed 1/min: 1000
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 92.00...93.00
 1000S.: (89.50...95.50)
 18th speed 1/min: 700
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 77.50...80.50
 1000S.: (76.00...82.00)
 20th speed 1/min: 500
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 71.50...74.50
 1000S.: (70.00...76.00)
 Mech. shutoff:
 Mech. Abstellung:
 1st speed 1/min: 1300

Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 350
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 13.00...17.00
1000S.: (10.00...20.00)

Dispersion cm³/: 3.5
1000S.: (3.5)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 4.00...10.00
1000S.: (2.00...12.00)

4th speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...2.60
1000S.: (0.00...2.60)

Automatic starting fuel delivery:

1st speed 1/min: 150
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 100.00...140.00
1000S.: (100.00...140.00)

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...70.00
1000S.: (40.00...70.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 90.00...130.00
1000S.: (90.00...130.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: K-OT
MS	mm: 1,1...1,3
SVS max.	mm: 6,0
LDA stroke	mm: 6,1
XK	mm: 20,0...22,0
XL	mm: 10,5...13,9

Remarks:

:
Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 L10
Edition : 15.07.91
replaces : 28.03.90
Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R173-7
Type number : 0 460 426 089
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 6 BTA-590 I

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 1,85
mm: +0,02(0,06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
Setting value mm: 2.00...2.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900
Setting value bar: 4.30...4.90
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
Del. quantity cm3/
1000S.: 68.50...69.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 9.00...13.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1150
Del. quantity cm3/
1000S.: 52.00...58.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...120.00
mind 1000S.: 60.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 2.60...3.40
mm: (2.30...3.70)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 900

TD travel mm: 2.00...2.40
 mm: (1.50...2.90)
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 700
 TD travel mm: 0.70...1.50
 mm: (0.40...1.80)
 Shutoff
 electromagnet Volt: 12
 Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump pressure bar: 2.30...2.90
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 900
 Supply-pump pressure bar: 4.30...4.90
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 Supply-pump pressure bar: 4.90...5.50
 Shutoff
 electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1100
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...154.00)
 Delivery-quant. and breakaway char.:
 2nd speed 1/min: 1220
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)
 Del. quantity cm³/: 0.00...15.00
 1000s.: (0.00...15.00)
 4th speed 1/min: 1180
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 15.00...55.00
 1000s.: (15.00...55.00)
 5th speed 1/min: 1150
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 52.00...58.00
 1000s.: (49.00...61.00)
 9th speed 1/min: 1100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 64.00...67.00
 1000s.: (62.50...68.50)
 10th speed 1/min: 900
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 64.50...67.50
 1000s.: (63.00...69.00)
 12th speed 1/min: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 68.50...69.50
 1000s.: (66.00...72.00)
 Delivery-quant. and breakaway char.:
 Inj.-qty.values,temp.-compensated
 temperatura
 1000s.: (0.00...3.00)
 Mech. shutoff:
 Mech. Abstellung:
 1st speed 1/min: 1100
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)
 Shutoff
 electromagnet volt: 12
 Electr. shutoff:
 1st speed 1/min: 375
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)
 Shutoff
 electromagnet volt: -
 Idle delivery:
 1st speed 1/min: 375
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 9.00...13.00
 1000s.: (6.00...16.00)
 Dispersion cm³/: 5.5
 1000s.: (7.0)
 2nd speed 1/min: 430
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...4.00
 1000s.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 140
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 60.00...120.00
1000S.: (60.00...120.00)

2nd speed 1/min: 240
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 30.00...60.00
1000S.: (30.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 60.00...120.00
1000S.: (60.00...120.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5,0...5,4
MS	mm: 1,2...1,6
SVS max.	mm: 2,7
XK	mm: 20,2...22,2
XL	mm: 11,2...14,6

Remarks:

: C.D.C. #390 4731
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 W35
 Copl. date: : -
 Edition : 12.07.91
 replaces : 19.04.90
 Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R376
 Type number : 0 460 426 147
 Customer Part-No. : 391 7559

Customer-specific information
 Customer : CDC

Engine : 6 BT- 5.9 IND
 Speed 1/min: 1100

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening
 Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0,3
 (from BDC): +0,2(0,04)

Start of delivery block
 Piston stroke mm: 1,5
 mm: +0,02(0,06)

Outlet : D

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
 Setting value mm: 3.10...3.50
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 750
 Setting value bar: 4.10...4.70
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
 Del. quantity cm3/
 1000S.: 80.00...81.00
 Shutoff
 electromagnet Volt: 12
 Dispersion cm3/: 4.0
 1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 400
 Del. quantity cm3/
 1000S.: 6.00...12.00
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 5.5
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1150
 Del. quantity cm3/
 1000S.: 50.50...56.50
 Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm3/: 80.00...140.00
 mind 1000S.: 80.00
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
 TD travel mm: 5.60...6.40
 mm: (5.30...6.70)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 750

TD travel mm: 3.10...3.50
 mm: (2.60...4.00)
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 500
 TD travel mm: 1.00...1.80
 mm: (0.70...2.10)
 Shutoff
 electromagnet Volt: 12
 Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump pressure bar: 3.00...3.60
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 750
 Supply-pump pressure bar: 4.10...4.70
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 Supply-pump pressure bar: 5.70...6.30
 Shutoff
 electromagnet Volt: 12
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.70)
 2nd speed 1/min: 1100
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...154.00)
 Delivery-quant. and breakaway char.:
 2nd speed 1/min: 1230
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 1165
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 15.00...55.00
 1000S.: (15.00...55.00)
 5th speed 1/min: 1150
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 50.50...56.50
 1000S.: (47.50...59.50)
 9th speed 1/min: 1100

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 68.50...71.50
 1000S.: (67.00...73.00)
 10th speed 1/min: 900
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 72.50...75.50
 1000S.: (70.50...77.50)
 12th speed 1/min: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 80.00...81.00
 1000S.: (77.50...83.50)
 20th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 1000S.: (82.00...90.00)

Mech. shutoff:
 Mech. Abstellung:

1st speed 1/min: 1100
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 400
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 6.00...12.00
 1000S.: (4.00...14.00)

Dispersion cm³/: 5.5
 1000S.: (7.0)

2nd speed 1/min: 470
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 95.00...165.00
 1000S.: (95.00...165.00)

2nd speed 1/min: 250

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 55.00...95.00
1000S.: (55.00...95.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 80.00...140.00
1000S.: (80.00...140.00)

Shutoff electromagnet:

Cut-in
min voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5,0...5,4
MS	mm: 1,2...1,6
SVS max.	mm: 1,8
XK	mm: 18,8...20,8
XL	mm: 11.9...15,3

Remarks:
: C.D.C. # 391 7559

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 W63
Edition : 12.07.91
replaces : 20.06.90
Calibrating oil : ISO-4113

Injection pump : VE6/12F1300R377-1
Type number : 0 460 426 174
Customer Part-No. :

Customer-specific information
Customer : CUMMINS

Engine : 6 BT 5.9 A

Power KW: 217
Speed 1/min: 2600

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 2,35
mm: +0,02(0,06)

Outlet : D

Injection-pump setting values

J20

Test specifications in parentheses

Timing-device travel

Speed 1/min: 850
Charge press. hPa: 1000
Setting value mm: 2.60...3.00
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 850
Charge press hPa: 1000
Setting value bar: 6.60...7.20
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 73.50...74.50

Shutoff
electromagnet Volt: 24
Dispersion cm3/
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 50.50...51.50

Shutoff
electromagnet Volt: 24
Dispersion cm3/
1000S.: (9.0)

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 9.00...11.00

Shutoff
electromagnet Volt: 24
Del. quantity cm3/
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1400
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 54.00...60.00

Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm³/: 60.00...140.00
mind 1000S.: 60.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1300
Charge press hPa: 1000
TD travel mm: 2.90...3.70
mm: (2.60...4.00)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 850
Charge press hPa: 1000
TD travel mm: 2.60...3.00
mm: (2.10...3.50)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 700
Charge press hPa: 1000
TD travel mm: 1.40...2.20
mm: (1.10...2.50)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.80...5.40
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 850
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.60...7.20
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1300
Charge press. hPa: 1000
Supply-pump
pressure bar: 8.60...9.20
Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 24
Overflow : 104.25...145.95
quantity cm³/10s: (89.25...160.95)
2nd speed 1/min: 1300
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Overflow : 111.20...194.60
quantity cm³/10s: (96.20...209.60)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700*
Charge-air pressure-setting
point hPa: 475
LDA-stroke mm: -
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 63.00...64.00
1000S.: (59.50...67.50)

2nd speed 1/min: 1600
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 1480
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 15.00...55.00
1000S.: (15.00...55.00)

5th speed 1/min: 1400
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 54.00...60.00
1000S.: (51.00...63.00)

9th speed 1/min: 1300
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 66.00...69.00
1000S.: (64.50...70.50)

10th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 69.50...72.50
1000S.: (67.50...74.50)

12th speed 1/min: 850
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quynity cm³/: 73.50...74.50
1000S.: (71.00...77.00)

18th speed 1/min: 500
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 50.50...51.50
1000S.: (47.00...55.00)

20th speed 1/min: 500
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: -
1000S.: (81,50...91,50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1300
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 350
Charge press. hPa: -
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 9.00...11.00
1000S.: (5.00...15.00)
Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...4.00
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 250
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 50.00...110.00
1000S.: (50.00...110.00)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 20.00...60.00
1000S.: (20.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 60.00...140.00
1000S.: (60.00...140.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: K-OT
MS	mm: 1,2...1,6
SVS max.	mm: 2,2
XK	mm: 21,8...23,8
XL	mm: 10,2...13,6

Remarks:

: C.D.C. # 391 6987

Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut (46)

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 W80
Edition : 22.05.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F1250R419
Type number : 0 460 426 184
Customer Part-No. : 391 8991

Customer-specific information
Customer : CDC

Engine : 6 BTA 590A
Speed 1/min: 1250

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 109

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 1.25
mm: +0,02(0,06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 1.60...2.00
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 6.30...6.90
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 85.00...86.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 5.0
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 59.50...60.50

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 5.0
1000S.: (6.0)

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 12.00...16.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1325
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 75.00...81.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 80.00...160.00
mind 1000S.: 80.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1250
Charge press hPa: 1000
TD travel mm: 2.30...3.10
mm: (2.00...3.40)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 1.60...2.00
mm: (1.10...2.50)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 850
Charge press hPa: 1000
TD travel mm: 0.80...1.60
mm: (0.50...1.90)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 450*
Charge press. hPa: -
TD travel mm: 2.00...3.00 *
mm: (1.80...3.20) *

Supply-pump pressure characteristic:

1st speed 1/min: 850
Charge press. hPa: 1000
Supply-pump pressure bar: 5.70...6.30

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump pressure bar: 6.30...6.90

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump pressure bar: 7.40...8.00

Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 3.90...4.50

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -

Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 440
LDA-stroke mm: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 82.50...83.50
1000s.: (79.00...87.00)

2nd speed 1/min: 1480
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

3rd speed 1/min: 1430
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...45.00
1000s.: (15.00...45.00)

5th speed 1/min: 1325
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 75.00...81.00
1000s.: (72.00...84.00)

9th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 83.50...88.50
1000s.: (82.00...90.00)

10th speed 1/min: 1050
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 84.50...89.50
1000s.: (83.00...91.00)

12th speed 1/min: 850
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quynntity cm³/: 85.00...86.00
1000s.: (82.50...88.50)

18th speed 1/min: 500
Charge press. hPa: -

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 59.50...60.50
1000S.: (56.00...64.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 400
Charge press. hPa: -
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 12.00...16.00
1000S.: (9.00...19.00)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 460

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 80.00...160.00
1000S.: (80.00...160.00)

2nd speed 1/min: 240
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...80.00
1000S.: (50.00...80.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 80.00...160.00
1000S.: (80.00...160.00)

Shutoff electromagnet:

Cut-in
min voltage : 10,0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3,6...3,8
KF mm: K-OT
MS mm: 0,7...1,1

Remarks:

:
:
:
Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

Operate control lever after each
manifold-pressure compensator pressure
change.

* Unscrew KSB ball valve 2 mm

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 W81
Edition : 22.05.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F1250R372-2
Type number : 0 460 426 185
Customer Part-No. : 391 6948

Customer-specific information
Customer : CDC

Engine : 6BT-5.9 IND.

Power KW: -
Speed 1/min: 1250

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42,00...50,00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm: 1,3
mm: $\pm 0,02(0,06)$

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 750
Setting value mm: 3.40...3.80
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 750
Setting value bar: 3.50...4.10
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 1100
Del. quantity cm³/
1000S.: 73.00...74.00

Shutoff
electromagnet Volt: 24
Dispersion cm³/: 4.0
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 360
Del. quantity cm³/
1000S.: 8.00...14.00

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1300
Del. quantity cm³/
1000S.: 51.00...57.00

Start:

Speed 1/min: 100
Del. quantity cm³/: 60.00...120.00
mind 1000S.: 60.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 5.20...6.00
mm: (4.90...6.30)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 750

TD travel mm: 3.40...3.80
 mm: (2.90...4.30)
 Shutoff
 electromagnet Volt: 24
 4th speed 1/min: 500
 TD travel mm: 1.30...2.10
 mm: (1.00...2.40)
 Shutoff
 electromagnet Volt: 24
 Supply-pump pressure characteristic:
 1st speed 1/min: 500
 Supply-pump pressure bar: 2.40...3.00
 Shutoff
 electromagnet Volt: 24
 2nd speed 1/min: 750
 Supply-pump pressure bar: 3.50...4.10
 Shutoff
 electromagnet Volt: 24
 3rd speed 1/min: 1100
 Supply-pump pressure bar: 4.80...5.40
 Shutoff
 electromagnet Volt: 24
 Overflow quantity at overflow valve:
 1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Overflow : 41.70...83.40
 quantity cm³/10s: (26,70...98.40)
 2nd speed 1/min: 1250
 Shutoff
 electromagnet Volt: 24
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...154.00)
 Delivery-quant. and breakaway char.:
 2nd speed 1/min: 1400
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 1350
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 15.00...55.00
 1000S.: (15.00...55.00)
 5th speed 1/min: 1300
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 51.00...57.00
 1000S.: (48.00...60.00)
 9th speed 1/min: 1250

Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 68.50...71.50
 1000S.: (67.00...73.00)
 10th speed 1/min: 900
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 74.50...78.50
 1000S.: (72.50...80.50)
 11th speed 1/min: 750
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 75.00...79.00
 1000S.: -
 12th speed 1/min: 1100
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 73.00...74.00
 1000S.: (70,50...76,50)
 20th speed 1/min: 500
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 64.00...72.00
 1000S.: (62.00...74.00)

Mech. shutoff:
 Mech. Abstimmung:

1st speed 1/min: 1250
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 360
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 360
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 8.00...14.00
 1000S.: (6.00...16.00)

Dispersion cm³/: 5.5
 1000S.: (7.0)

2nd speed 1/min: 450
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 0.00...4.00
 1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 70.00...130.00
1000S.: (70.00...130.00)

2nd speed 1/min: 240
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 30.00...70.00
1000S.: (30.00...70.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 60.00...120.00
1000S.: (60.00...120.00)

Shutoff electromagnet:

Cut-in
min voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5,0...5,4
MS	mm: 0,6...1,0
SVS max.	mm: 1,3
XK	mm: 18,8...20,8
XL	mm: 11,1...14,5

Remarks:

⋮

Values without check tolerance do
not apply when checking pump.

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 W82
Edition : 22.05.91
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F1250R419-1
Type number : 0 460 426 186
Customer Part-No. : 391 3442

Customer-specific information
Customer : CDC

Engine : 6 BTA 590A

Power KW: 118
Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 109

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 1.25
mm: +0,02(0,06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 1.60...2.00
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 6.30...6.90
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 85.00...86.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 5.0
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 59.50...60.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 5.0
1000S.: (6.0)

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 12.00...16.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 5.5
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1325
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 75.00...81.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 80.00...160.00
mind 1000S.: 80.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1250
Charge press hPa: 1000
TD travel mm: 2.30...3.10
mm: (2.00...3.40)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 1.60...2.00
mm: (1.10...2.50)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 850
Charge press hPa: 1000
TD travel mm: 0.80...1.60
mm: (0.50...1.90)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 450*
Charge press. hPa: -
TD travel mm: 2.00...3.00 *
mm: (1.80...3.20) *

Supply-pump pressure characteristic:

1st speed 1/min: 850
Charge press. hPa: 1000
Supply-pump pressure bar: 5.70...6.30

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump pressure bar: 6.30...6.90

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump pressure bar: 7.40...8.00

Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 3.90...4.50

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500

Charge press. hPa: -

Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)

2nd speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 440
LDA-stroke mm: -

Shutoff
electromagnet Volt: 12
Del. quantity cm³: 82.50...83.50
1000S.: (79.00...87.00)

2nd speed 1/min: 1480
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 1430
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 15.00...45.00
1000S.: (15.00...45.00)

5th speed 1/min: 1325
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 75.00...81.00
1000S.: (72.00...84.00)

9th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 83.50...88.50
1000S.: (82.00...90.00)

10th speed 1/min: 1050
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 84.50...89.50
1000S.: (83.00...91.00)

12th speed 1/min: 850
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 85.00...86.00
1000S.: (82.50...88.50)

18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 59.50...60.50
1000S.: (56.00...64.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 400
Charge press. hPa: -
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 12.00...16.00
1000S.: (9.00...19.00)
Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 460
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 80.00...160.00
1000S.: (80.00...160.00)

2nd speed 1/min: 240
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.00...80.00
1000S.: (50.00...80.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 80.00...160.00
1000S.: (80.00...160.00)

K03

Shutoff electromagnet:

Cut-in
min voltage : 10,0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3,6...3,8
KF mm: K-OT
MS mm: 0,7...1,1

Remarks:

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

Operate control lever after each
manifold-pressure compensator pressure
change.

* Unscrew KSB ball valve 2 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 15,8 c2
 Edition : 21.06.91
 Replaces : 3.6.91
 Test oil : ISO-4113
 Combination no. : 0 400 649 188
 Injection pump
 Pump designation : PE10A95D610/4LS2452
 EP type number : 0 410 699 998
 Governor
 Governor design. : RQV300...1150AB988DL
 Governor no. : 0 420 214 229

Customer-spec. information
 Customer : KHD

Engine : F10L413F

1st version kW : 216.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 10- 9- 4- 3- 6-
 5- 8- 7- 2

Phasing : 0-27-72-99-144-171-
 216-243-288-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.00...10.10

Del.quantity cm3/ : 9.1...9.2

100 s: (8.9...9.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.0...7.2

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.10...1.60

2nd speed rpm : 340
 travel mm : 1.60...2.10

3rd speed rpm : 710
 travel mm : 3.70...4.20

4th speed rpm : 1200
 travel mm : 8.60...9.10

5th speed rpm : 1390
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 91.5...92.5

1000 : (89.5...94.5)

Spread cm³ : 3.00
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:

1st rack travel in: 9.00
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 80...88

Testing:

Speed rpm : 200
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 5.90...6.10
Speed rpm : 750
Maximum rack travel: 1.00

CONSTANT REGULATION

Speed rpm : 320...390

TORQUE CONTROL

Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 10.00...10.10
2nd speed rpm : 975
Rack travel in m: 10.20...10.40
3rd speed rpm : 700
Rack travel in m: 10.50...10.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm³/ : 90.0...93.0
1000 s: (87.5...95.5)

RACK STOP ADJUSTMENT

Speed rpm : 600

BREAKAWAY

K05

1st version
1mm rack travel less than

full load rack tr: 9.00
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.00...7.20
Del.quantity cm³/ : 17.0...23.0
1000 s: (14.5...25.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : HAN 10,8 h1
Edition : 21.06.91
Replaces : 25.10.88
Test oil : ISO-4113

Combination no. : 0 400 676 186

Injection pump
Pump designation : PE6A95D32ORS2557
EP type number : 0 410 696 986
Governor
Governor design. : RSV400...1100A8C1117
-1R
Governor no. : 0 420 233 205

Customer spec. information
Customer : HANOMAG

Engine : D963N

1st version kW : 110.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
: (2.10...2.30)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.90...10.00

Del.quantity cm3/ : 8.2...8.4

100 s: (8.0...8.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 8.0...8.2

Del.quantity cm3/ : 3.1...3.9

100 s: (2.8...4.1)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 82.0...84.0

1000 : (80.0...86.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 104...112

Testing:

1st rack travel in: 8.90

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1160...1190
3rd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1365
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 7.6

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 400
Rack travel in mm : 8.00...8.20
Rack travel in mm : 2.00
Speed rpm : 585...645

TORQUE CONTROL

Dimension a mm : 0.80
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 9.90...10.00
2nd speed rpm : 500
Rack travel in m: 10.70...10.80
4th speed rpm : 865
Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 79.0...82.0
1000 s: (76.5...84.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.90
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 122.0...132.0
1000 s: (119.0...135.0)
Rack travel in mm : 19.50...21.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 a 2
 Edition : 26.07.91
 Replaces : 11.7.88
 Test oil : ISO-4113
 Combination no. : 0 400 844 088
 Injection pump
 Pump designation : PES4A90D410RS2666
 EP type number : 0 410 894 029
 Governor
 Governor design. : RQV300...1400AB1065-10L
 Governor no. : 0 420 212 203

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM364

1st version kW : 66.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.90...11.00

Del.quantity cm³/ : 6.3...6.4

100 s: (6.1...6.6)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 8.6...8.8

Del.quantity cm³/ : 0.8...1.2

100 s: (0.6...1.4)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 63.5...64.5

1000 : (61.5...66.5)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 111...119

Testing:

1st rack travel in: 9.90

Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1545...1575
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 72...80

Testing:

Speed rpm : 100
Minimum rack travel: 10.20
Speed rpm : 300
Rack travel in mm : 8.60...8.80

CONSTANT REGULATION

Speed rpm : 540...680

TORQUE CONTROL

Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.90...11.00
2nd speed rpm : 500
Rack travel in m: 12.00...12.20
3rd speed rpm : 700
Rack travel in m: 11.70...12.00
4th speed rpm : 900
Rack travel in m: 11.30...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 50.0...53.0
1000 s: (47.5...55.5)
1000 s: (5.)
Speed rpm : 900
Del.quantity cm3/ : 52.5...55.5
1000 s: (50.0...58.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100

K09

Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 16.60...17.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 w 3
Edition : 18.06.91
Replaces : 5.10.90
Test oil : ISO-4113

Combination no. : 0 400 846 578

Injection pump
Pump designation : PES6A95D32ORS2779
EP type number : 0 410 896 903
Governor
Governor design. : RQV350...1200AB1236-7R
Governor no. : 0 420 213 119

Customer-spec. information
Customer : NAVISTAR

Engine : DT 466

1st version kW : 145.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 110

Opening
pressure, bar : 250...253

Orifice plate
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

K10

Prestroke mm : 2.65...2.75
: (2.60...2.80)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.7...2.1

100 s: (1.5...2.3)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400

travel mm : 8.60...9.00

2nd speed rpm : 1250

travel mm : 7.30...7.50

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 900

Del.quantity : 101.5...103.5

1000 : (99.5...105.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 41...49

Testing:
1st rack travel in: 12.50
Speed rpm : 1230...1260
2nd rack travel in: 4.00
Speed rpm : 1385...1395
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION
Speed rpm : 350...500

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.50...13.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.10
2nd pressure hPa : 225
Rack travel in m: 10.90...11.00
3rd pressure hPa : 500
Rack travel in m: 12.50...12.90

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 74.5...78.5
1000 s: (72.5...80.5)

BREAKAWAY

K11

1st version
1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1230...1260

INTERMEDIATE RATED SPEED
Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...175.0
1000 s: (130.0...180.0)
Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 17.0...21.0
1000 s: (15.0...23.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
: NAVISTAR #1815517C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 y
Edition : 18.06.91
Replaces : 15.11.90
Test oil : ISO-4113

Combination no. : 0 400 846 579

Injection pump
Pump designation : PES6A95D32ORS2779
EP type number : 0 410 896 903
Governor
Governor design. : RQV350...135QAB1248-
R
Governor no. : 0 420 213 120

Customer-spec. information
Customer : NAVISTAR

Engine : DT 360

1st version kW : 126.0
Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 110

Opening
pressure, bar : 250...253

Orifice plate
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.65...2.75
: (2.60...2.80)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350
Rack travel in mm : 12.30...12.40
Del.quantity cm3/ : 8.4...8.6
100 s: (8.2...8.8)
Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 5.9...6.1
Del.quantity cm3/ : 1.7...2.1
100 s: (1.5...2.3)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
travel mm : 7.30...7.50
2nd speed rpm : 1460
travel mm : 8.10...8.50
3rd speed rpm : 550
travel mm : 3.10...3.70
4th speed rpm : 350
travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1350
Aneroid pressure h: 900
Del.quantity : 84.0...86.0
1000 : (82.0...88.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 44...52

Testing:
1st rack travel in: 11.30
Speed rpm : 1390...1420
2nd rack travel in: 4.00
Speed rpm : 1525...1535
4th rack travel in: 1625
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION
Speed rpm : 350...500

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.30...12.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.20...9.40
2nd pressure hPa : 240
Rack travel in m: 10.00...10.10
3rd pressure hPa : 435
Rack travel in m: 11.50...11.90

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 61.5...65.5
1000 s: (59.5...67.5)

BREAKAWAY

K13

1st version
1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1390...1420

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 17.0...21.0
1000 s: (15.0...23.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
: NAVISTAR #1816726C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 y1
 Edition : 18.06.91
 Replaces : 8.6.90
 Test oil : ISO-4113
 Combination no. : 0 400 846 580
 Injection pump
 Pump designation : PES6A95D320RS2779
 EP type number : 0 410 896 903
 Governor
 Governor design. : RQV350...1350AB1248-
 1R
 Governor no. : 0 420 213 121

Customer-spec. information
 Customer : NAVISTAR

Engine : DTA 360

1st version kW : 138.0
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 110

Opening
 pressure, bar : 250...253

Orifice plate
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.65...2.75
 : (2.60...2.80)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.7...2.1

100 s: (1.5...2.3)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 7.30...7.50

2nd speed rpm : 1460

travel mm : 8.10...8.50

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1350

Aneroid pressure h: 900

Del.quantity : 84.0...86.0

1000 : (82.0...88.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 44...52

Testing:
1st rack travel in: 11.30
Speed rpm : 1390...1420
2nd rack travel in: 4.00
Speed rpm : 1525...1535
4th rack travel in: 1625
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION
Speed rpm : 350...500

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.30...12.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.40...9.60
2nd pressure hPa : 215
Rack travel in m: 10.00...10.10
3rd pressure hPa : 430
Rack travel in m: 11.30...11.70

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 67.0...71.0
1000 s: (65.0...73.0)

BREAKAWAY

K15

1st version
1mm rack travel less than
full load rack tr: 11.30
Speed rpm : 1390...1420

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 145.0...165.0
1000 s: (140.0...170.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 17.0...21.0
1000 s: (15.0...23.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
: NAVISTAR #1816728C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 s
Edition : 26.07.91
Replaces : 24.4.91
Test oil : ISO-4113

Combination no. : 0 400 846 582

Injection pump
Pump designation : PES6A95D320RS2796
EP type number : 0 410 896 901
Governor
Governor design. : RQ300/1300AB1253-2R
Governor no. : 0 420 201 653

Customer-spec. information
Customer : DAF

Engine : NS 156G

1st version kW : 156.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 8.4...8.5

100 s: (8.2...8.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 0.6...1.0

100 s: (0.3...1.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 770

Rack travel in mm : 7.50...8.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 84.5...85.5

1000 : (82.5...87.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 770

Rack travel in mm : 8.0

Testing:

1st rack travel in: 11.60

Speed rpm : 1325...1340

2nd rack travel in: 4.00

Speed rpm : 1410...1440

4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 100
Minimum rack trave: 7.70
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 545...585

TORQUE CONTROL

Dimension a mm : 0.60
Torque control curve - 1st version
1st speed rpm : 1290
Rack travel in m: 12.60...12.70
2nd speed rpm : 750
Rack travel in m: 14.20...14.80
3rd speed rpm : 960
Rack travel in m: 13.50...14.10
4th speed rpm : 1055
Rack travel in m: 12.90...13.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 600
1st pressure hPa : -
Rack travel in m: 10.80...11.00
2nd pressure hPa : 260
Rack travel in m: 12.30...12.40
3rd pressure hPa : 210
Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1290
Del.quantity cm3/ : 87.0...89.0
1000 s: (84.5...91.5)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 44.5...45.5
1000 s: (42.5...47.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1325...1340

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 6.0...10.0
1000 s: (3.5...12.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 p 3
Edition : 02.08.91
Replaces : 5.11.90
Test oil : ISO-4113

Combination no. : 0 400 846 583

Injection pump
Pump designation : PES6A95D32ORS2693
EP type number : 0 410 896 914
Governor
Governor design. : RQ300/1300AB1253R
Governor no. : 0 420 201 649

Customer-spec. information
Customer : DAF

Engine : NS 156

1st version kW : 156.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.00...12.10

Del.quantity cm³/ : 8.7...8.8

100 s: (8.5...9.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm³/ : 0.6...1.0

100 s: (0.3...1.2)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 850

Rack travel in mm : 7.50...8.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 700

Del.quantity : 87.5...88.5

1000 : (85.5...90.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 850

Rack travel in mm : 8.0

Testing:

1st rack travel in: 11.00

Speed rpm : 1335...1350

2nd rack travel in: 4.00

Speed rpm : 1430...1460

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.4

Testing:

Speed rpm : 100

Minimum rack trave: 7.70

Speed rpm : 300

Rack travel in mm : 6.40...6.50

Rack travel in mm : 2.00

Speed rpm : 540...580

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 1280

Rack travel in m: 12.30...12.40

2nd speed rpm : 1000

Rack travel in m: 12.30...12.50

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 700

Rack travel mm : 12.00...12.10

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 10.30...10.50

2nd pressure hPa : 290

Rack travel in m: 11.50...11.60

3rd pressure hPa : 250

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/ : 53.5...54.5

1000 s: (51.5...56.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1335...1350

LOW IDLE

Speed rpm : 300

Rack travel in mm : 6.30...6.50

Del.quantity cm3/ : 6.0...10.0

1000 s: (3.5...12.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 p 4
Edition : 26.07.91
Replaces : 24.4.91
Test oil : ISO-4113

Combination no. : 0 400 846 585

Injection pump
Pump designation : PES6A95D320RS2693
EP type number : 0 410 896 914
Governor
Governor design. : RQ300/1300AB1253-1R
Governor no. : 0 420 201 650

Customer-spec. information
Customer : DAF

Engine : NS 133

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 7.6...7.7

100 s: (7.4...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm3/ : 0.6...1.0

100 s: (0.3...1.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 725

Rack travel in mm : 7.50...8.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del.quantity : 76.5...77.5

1000 : (74.5...79.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 725

Rack travel in mm : 8.0

Testing:

1st rack travel in: 9.50

Speed rpm : 1335...1350

2nd rack travel in: 4.00

Speed rpm : 1410...1440

4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.4

Testing:

Speed rpm : 100

Minimum rack trave: 7.70

Speed rpm : 300

Rack travel in mm : 6.30...6.50

Rack travel in mm : 2.00

Speed rpm : 525...565

TORQUE CONTROL

Dimension a mm : 0.55

Torque control curve - 1st version

1st speed rpm : 1290

Rack travel in m: 10.50...10.60

2nd speed rpm : 800

Rack travel in m: 11.80...12.40

3rd speed rpm : 950

Rack travel in m: 11.20...11.80

4th speed rpm : 1050

Rack travel in m: 10.70...11.10

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 700

Rack travel mm : 11.50...11.60

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 10.10...10.30

2nd pressure hPa : 160

Rack travel in m: 10.70...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 1290

Del.quantity cm³/ : 73.0...75.0

1000 s: (70.5...77.5)

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm³/ : 50.5...51.5

1000 s: (48.5...53.5)

BREAKAWAY

1st version

K21

1mm rack travel less than

full load rack tr: 9.50

Speed rpm : 1335...1350

LOW IDLE

Speed rpm : 300

Rack travel in mm : 6.30...6.50

Del.quantity cm³/ : 6.0...10.0

1000 s: (3.5...12.5)

Spread cm³ : 3.50

1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 p 5
Edition : 21.06.91
Replaces : 24.4.91
Test oil : ISO-4113

Combination no. : 0 400 846 586

Injection pump
Pump designation : PES6A95D320RS2693
EP type number : 0 410 896 914
Governor
Governor design. : RQ300/1300AB1254R
Governor no. : 0 420 201 651

Customer-spec. information
Customer : DAF

Engine : NT 119

1st version kW : 119.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 7.50...10.50

K22

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
& maximum rack tra: 21.00
Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 10.80...10.90

Del.quantity cm³/ : 6.1...6.2

100 s: (5.9...6.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm³/ : 0.6...1.0

100 s: (0.3...1.2)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 850

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 61.5...62.5

1000 : (59.5...64.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 850

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.30
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1410...1440

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.4

Testing:

Speed rpm : 100
Minimum rack travel: 7.70
Speed rpm : 300
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00
Speed rpm : 525...565

TORQUE CONTROL

Dimension a mm : 0.35
Torque control curve - 1st version
1st speed rpm : 1290
Rack travel in m: 10.30...10.40
2nd speed rpm : 850
Rack travel in m: 11.10...11.40
3rd speed rpm : 975
Rack travel in m: 10.70...11.00
4th speed rpm : 1025
Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1290
Del.quantity cm³/ : 68.0...70.0
1000 s: (65.5...72.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30
Speed rpm : 1340...1350

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.30...6.50
Del.quantity cm³/ : 6.0...10.0
1000 s: (3.5...12.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RAB 9,7 e
Edition : 26.07.91
Replaces : 22.3.91
Test oil : ISO-4113

Combination no. : 0 400 846 588

Injection pump
Pump designation : PES6A95D420LS2804
EP type number : 0 410 896 899
Governor
Governor design. : RQ200/1050AB1246-1R
Governor no. : 0 420 201 652

Customer-spec. information
Customer : RABA

Engine : D2156 HM6 UT

1st version kW : 162.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.80...1.90
: (1.75...1.95)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 11.9...12.1

100 s: (11.7...12.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 200.0

Rack travel in mm : 7.4...7.6

Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 500

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 119.0...121.0

1000 : (117.0...123.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 500

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.00

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1125...1155

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 200

Rack travel in mm : 6.5

Testing:

Speed rpm : 100

Minimum rack trave: 8.00

Speed rpm : 200

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 280...320

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 12.00...12.10

2nd speed rpm : 415

Rack travel in m: 13.10...13.50

3rd speed rpm : 680

Rack travel in m: 12.70...13.10

4th speed rpm : 835

Rack travel in m: 12.20...12.70

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 700

Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.70...10.80

2nd pressure hPa : 260

Rack travel in m: 12.50...12.60

3rd pressure hPa : 180

Rack travel in m: 11.10...11.40

START CUT-OUT

Speed 1/min : 140 (160)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 600

Del.quantity cm3/ : 113.0...116.0

1000 s: (110.5...118.5)

Aneroid pressure h: -

Speed rpm : 500

K25

Del.quantity cm3/ : 74.0...76.0

1000 s: (72.0...78.0)

RACK STOP ADJUSTMENT

Speed rpm : 500

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 150.0...160.0

1000 s: (147.0...163.0)

Rack travel in mm : 17.50...17.70

Remarks:

:

Set idle stop at 200 min -1 to a
control-rod travel of 6.5 mm

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 j 5
 Edition : 26.07.91
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 846 593

Injection pump
 Pump designation : PES6A95D410RS2797
 EP type number : 0 410 896 900
 Governor
 Governor design. : RGV300...1200AB1065-25L
 Governor no. : 0 420 212 229

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 92.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.90...10.00

Del.quantity cm³/ : 5.8...6.0

100 s: (5.6...6.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 8.6...9.0
 Del.quantity cm³/ : 0.8...1.2
 100 s: (0.5...1.4)
 Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.30
 2nd speed rpm : 500
 travel mm : 2.30...2.80
 3rd speed rpm : 750
 travel mm : 4.10...4.30
 4th speed rpm : 1500
 travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1450
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Del.quantity : 58.5...60.5
 1000 : (56.5...62.5)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 104...112

Testing:
1st rack travel in: 8.90
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1360...1390
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 73...81

Testing:
Speed rpm : 100
Minimum rack travel: 9.60
Speed rpm : 300
Rack travel in mm : 8.60...9.00

CONSTANT REGULATION
Speed rpm : 525...625

TORQUE CONTROL
Dimension a mm : 0.80
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 9.90...10.00
2nd speed rpm : 500
Rack travel in m: 10.70...10.90
4th speed rpm : 840
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ : 44.0...47.0
1000 s: (41.5...49.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.90
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100

K27

Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 14.60...15.00

Remarks:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 j 6
 Edition : 26.07.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 846 594
 Injection pump
 Pump designation : PES6A95D410RS2797
 EP type number : 0 410 896 900
 Governor
 Governor design. : RQV300...1400AB1065-
 26L
 Governor no. : 0 420 212 230

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 95.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.90...10.00

Del.quantity cm3/ : 5.8...6.0

100 s: (5.6...6.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 9.0...9.2

Del.quantity cm3/ : 0.8...1.2

100 s: (0.5...1.4)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1450

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 58.0...60.0

1000 : (56.0...62.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control Lever
position degrees: 109...117

Testing:

1st rack travel in: 8.90
Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1545...1575
4th rack travel in: 1670
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 71...79

Testing:

Speed rpm : 100
Minimum rack trave: 10.50
Speed rpm : 300
Rack travel in mm : 9.00...9.20

CONSTANT REGULATION

Speed rpm : 500...650

TORQUE CONTROL

Dimension a mm : 1.40
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 9.90...10.00
2nd speed rpm : 400
Rack travel in m: 11.30...11.60
3rd speed rpm : 650
Rack travel in m: 10.90...11.10
4th speed rpm : 900
Rack travel in m: 10.40...10.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 400
Del.quantity cm3/ : 48.0...51.0
1000 s: (45.5...53.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.90
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 14.60...15.00

Remarks:

:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 3,0 d
 Edition : 21.06.91
 Replaces : 28.11.88
 Test oil : ISO-4113

Combination no. : 0 400 863 013

Injection pump
 Pump designation : PES3A90D410/3RS2740
 EP type number : 0 410 893 006
 Governor
 Governor design. : RSV325...1150A0C2219
 L
 Governor no. : 0 420 232 466

Customer-spec. information
 Customer : KHD

Engine : F3L913G

1st version kW : 36.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 2

Phasing : 0-120-240
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 9.20...9.30

Del.quantity cm3/ : 5.2...5.3
 100 s: (5.0...5.5)

Spread cm3 : 0.3
 100 s: (0.5)

2nd speed rpm : 375.0
 Rack travel in mm : 5.9...6.1
 Del.quantity cm3/ : 1.1...1.7
 100 s: (0.9...1.9)

Spread cm3 : 0.2
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 650
 Del.quantity : 52.0...53.0
 1000 : (50.0...55.0)

Spread cm3 : 3.00
 1000 : (5.00)

RATED SPEED

1st version
 Control lever
 position degrees: 107...115

Testing:
 1st rack travel in: 8.10
 Speed rpm : 1090...1100
 2nd rack travel in: 4.00
 Speed rpm : 1120...1150
 3rd rack travel in: 4.00

Speed rpm : 1135...1165
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 375
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 495...555

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 650
Rack travel in m: 9.20...9.30
2nd speed rpm : 350
Rack travel in m: 9.30...9.60
3rd speed rpm : 1050
Rack travel in m: 9.10...9.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 350
Del.quantity cm3/ : 45.0...47.0
1000 s: (42.5...49.5)
Speed rpm : 1050
Del.quantity cm3/ : 63.5...65.5
1000 s: (61.0...68.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.10
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 57.0...67.0
1000 s: (54.0...70.0)
Rack travel in mm : 10.70...10.90

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 g 43
 Edition : 02.08.91
 Replaces : 4.5.90
 Test oil : ISO-4113

Combination no. : 0 400 864 074

Injection pump
 Pump designation : PES4A85D410/3RS2638
 EP type number : 0 410 884 950
 Governor
 Governor design. : RSV325..1150AOC2168-4L
 Governor no. : 0 420 232 524

Customer-spec. information
 Customer : KHD

Engine : BF4L913T

1st version kw : 60.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 7.1...7.2

100 s: (6.9...7.4)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 8.8...9.0

Del.quantity cm3/ : 1.6...2.2

100 s: (1.4...2.4)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 71.5...72.5

1000 : (69.5...74.5)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 101...109

Testing:

1st rack travel in: 10.40

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1270...1300

3rd rack travel in: 4.00

Speed rpm : 1330...1360
4th rack travel in: 1500
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 76...84
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 8.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 8.80...9.00
Rack travel in mm : 2.00
Speed rpm : 720...780

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.40...11.50
2nd speed rpm : 500
Rack travel in m: 12.50...12.60
3rd speed rpm : 940
Rack travel in m: 11.90...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del.quantity cm³/ : 71.5...73.5
1000 s: (69.0...76.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.40
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 125.0...135.0
1000 s: (122.0...138.0)
Rack travel in mm : 19.50...21.00

Remarks:

: DX3X

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 4,1 b 6
 Edition : 26.07.91
 Replaces : 3.6.91
 Test oil : ISO-4113

Combination no. : 0 400 864 092

Injection pump
 Pump designation : PES4A90D320/3RS2659
 EP type number : 0 410 894 028
 Governor
 Governor design. : RSV325...1250A5C2182
 -9R
 Governor no. : 0 420 233 287

Customer-spec. information
 Customer : MWM

Engine : TD226B-4

1st version kW : 87.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 9.1...9.2
 100 s: (8.9...9.4)

Spread cm3 : 0.3
 100 s: (0.5)

2nd speed rpm : 325.0
 Rack travel in mm : 6.9...7.1
 Del.quantity cm3/ : 0.8...1.4
 100 s: (0.6...1.6)

Spread cm3 : 0.2
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Areroid pressure h: 700
 Del.quantity : 91.5...92.5
 1000 : (89.5...94.5)

Spread cm3 : 3.00
 1000 : (5.00)

RATED SPEED

1st version
 Control Lever
 position degrees: 103...111

Testing:
 1st rack travel in: 10.50

Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1345...1375
3rd rack travel in: 4.00
Speed rpm : 1355...1385
4th rack travel in: 1520
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 445...505

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 11.50...11.60
2nd speed rpm : 500
Rack travel in m: 12.50...12.60
3rd speed rpm : 920
Rack travel in m: 11.90...12.10

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.40...10.50
2nd pressure hPa : 185
Rack travel in m: 11.60...11.70
3rd pressure hPa : 90
Rack travel in m: 11.00...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 700
Del.quantity cm³/ : 98.5...100.5
1000 s: (96.0...103.0)

Aneroid pressure h: 85
Speed rpm : 500
Del.quantity cm³/ : 79.0...81.0
1000 s: (76.5...83.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 61.0...63.0
1000 s: (59.0...65.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.50
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 132.0...142.0
1000 s: (129.0...145.0)
Rack travel in mm : 19.50...21.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 4,1 b 7
Edition : 26.07.91
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 864 093

Injection pump
Pump designation : PES4A90D320/3RS2659
EP type number : 0 410 894 028
Governor
Governor design. : RSV325...1250A5C505-4R
Governor no. : 0 420 233 288

Customer-spec. information
Customer : MWM

Engine : D226-B4

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
(2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00

& maximum rack tra: 21.00

Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 9.0...9.1

100 s: (8.8...9.3)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 0.8...1.4

100 s: (0.6...1.6)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 90.0...91.0

1000 : (88.0...93.0)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 105...113

Testing:

1st rack travel in: 11.00

Speed rpm : 1290...1300

2nd rack travel in: 4.00
Speed rpm : 1340...1370
3rd rack travel in: 4.00
Speed rpm : 1360...1390
4th rack travel in: 1520
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00
Speed rpm : 440...500

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 12.00...12.10
2nd speed rpm : 500
Rack travel in m: 12.00...12.20

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...140.0
1000 s: (127.0...143.0)
Rack travel in mm : 19.50...21.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 6,2 e 4
Edition : 21.06.91
Replaces : 31.8.90
Test oil : ISO-4113

Combination no. : 0 400 866 112

Injection pump
Pump designation : PES6A90D320/3RS2660
EP type number : 0 410 896 078
Governor
Governor design. : RSV325...1500A2C505-2R
Governor no. : 0 420 233 196

Customer-spec. information
Customer : MWM

Engine : D226-6

1st version kW : 110.0
Rated speed : 3000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
: (2.90...3.10)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
& maximum rack tra: 21.00
Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1500

Rack travel in mm : 11.20...11.30

Del.quantity cm3/ : 8.9...9.0

100 s: (8.7...9.2)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0
Rack travel in mm : 7.0...7.2
Del.quantity cm3/ : 0.8...1.4
100 s: (0.6...1.6)
Spread cm3 : 0.2
100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1500
Del.quantity : 89.5...90.5
1000 : (87.5...92.5)
Spread cm3 : 3.00
1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 107...115

Testing:

1st rack travel in: 10.20
Speed rpm : 1540...1550
2nd rack travel in: 4.00
Speed rpm : 1590...1620
3rd rack travel in: 4.00
Speed rpm : 1605...1635
4th rack travel in: 1780
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 68...76

Setting point w/out bumper spring

Speed rpm : 325

Rack travel in mm : 6.6

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 325
Rack travel in mm : 7.00...7.20
Rack travel in mm : 2.00
Speed rpm : 460...520

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1500

Rack travel in m: 11.20...11.30

2nd speed rpm : 500

Rack travel in m: 11.20...11.40

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20

Speed rpm : 1540...1550

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 130.0...140.0
1000 s: (127.0...143.0)

Rack travel in mm : 19.50...21.00

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a63
Edition : 08.07.91
Replaces : 18.2.91
Test oil : ISO-4113

Combination no. : 0 400 866 132

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV500...1250A0C2190
-28R
Governor no. : 0 420 233 231

Customer spec. information
Customer : C.D.C.

Engine : 6 CT-I 8.3ltr.

1st version kW : 139.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
(2.75...2.95)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.40...11.50

Del.quantity cm³/ : 10.2...10.4

100 s: (10.0...10.6)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 500.0

Rack travel in mm : 5.5...5.7

Del.quantity cm³/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 102.5...104.5

1000 : (100.5...106.5)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 10.40

Speed rpm : 1315...1325

2nd rack travel in: 4.00

Speed rpm : 1365...1375
3rd rack travel in: 4.00
Speed rpm : 1365...1395
4th rack travel in: 1450
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 19...27
Setting point w/out bumper spring
Speed rpm : 500
Rack travel in mm : 5.1

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 500
Rack travel in mm : 5.50...5.70

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.40
Speed rpm : 1315...1325

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 145.0...165.0
1000 s: (140.0...170.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 500
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:
: C.D.C. # 3915687

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm
before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a66
Edition : 08.07.91
Replaces : 18.2.91
Test oil : ISO-4113

Combination no. : 0 400 866 140

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...1100AOC2190
-33R
Governor no. : 0 420 233 237

Customer-spec. information
Customer : C.D.C.

Engine : 6 CTA 8.3ltr

1st version kW : 174.5
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness : 6.00X2.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 12.8...13.0

100 s: (12.6...13.2)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 1.4...1.8

100 s: (1.2...2.1)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 128.0...130.0

1000 : (126.0...132.0)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 11.70
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1200...1230
3rd rack travel in: 4.00
Speed rpm : 1205...1235
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.50...5.70

BREAKAWAY

1st version
1mm rack travel less than

full load rack travel: 11.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 145.0...165.0
1000 s: (140.0...170.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 14.5...18.5
1000 s: (12.0...21.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: C.D.C # 3915967

Adjust stop lever to 0.5...1.0 mm
before stop.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 L10
Edition : 08.07.91
Replaces : 14.12.90
Test oil : ISO-4113

Combination no. : 0 400 866 148

Injection pump
Pump designation : PES6A100D320/3RS2763
EP type number : 0 410 806 006
Governor
Governor design. : RSV415..1175AOC2190-43R
Governor no. : 0 420 233 249

Customer-spec. information
Customer : C.D.C

Engine : 6 CT

1st version kW : 129.0
Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
(2.75...2.95)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 415.0
Rack travel in mm : 5.1...5.3
Del.quantity cm3/ : 1.5...1.9
100 s: (1.2...2.1)
Spread cm3 : 0.6
100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1175
Del.quantity : 96.0...98.0
1000 : (94.0...100.0)
Spread cm3 : 4.00
1000 : (6.50)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:

1st rack travel in: 9.40
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1295...1325
3rd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 32...40
Setting point w/out bumper spring
Speed rpm : 415
Rack travel in mm : 4.7

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 415
Rack travel in mm : 5.10...5.30

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 10.40...10.50
2nd speed rpm : 800
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 800
Del.quantity cm³/ : 98.0...102.0
1000 s: (96.0...104.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.40
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 145.0...165.0
1000 s: (140.0...170.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 415
Rack travel in mm : 5.10...5.30
Del.quantity cm³/ : 15.0...19.0
1000 s: (12.5...21.5)

Spread cm³ : 6.00
1000 s: (8.00)

Remarks:
: C.D.C # 3919459

Adjust stop lever to 0.5...1.0 mm
before stop.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 L13
 Edition : 08.07.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 866 149
 Injection pump
 Pump designation : PES6A100D320/3RS2763
 EP type number : 0 410 806 006
 Governor
 Governor design. : RSV375...1000A0C2190
 -44R
 Governor no. : 0 420 233 250

Customer-spec. information
 Customer : C.D.C.

Engine : 6 CTA

1st version kW : 166.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 13.2...13.4

100 s: (13.0...13.6)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 375.0
 Rack travel in mm : 5.3...5.5
 Del.quantity cm3/ : 1.4...1.8
 100 s: (1.1...2.0)
 Spread cm3 : 0.6
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Del.quantity : 132.5...134.5
 1000 : (130.5...136.5)
 Spread cm3 : 4.00
 1000 : (6.50)

RATED SPEED

1st version
 Control lever
 position degrees: 37...45

Testing:

1st rack travel in: 11.90
Speed rpm : 1050...1060
2nd rack travel in: 4.00
Speed rpm : 1115...1145
3rd rack travel in: 4.00
Speed rpm : 1120...1150
4th rack travel in: 1200
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 15...23
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 4.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 375
Rack travel in mm : 5.30...5.50

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 12.90...13.00
2nd speed rpm : 750
Rack travel in m: 13.60...13.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del. quantity cm³/ : 141.5...145.5
1000 s: (139.5...147.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 1050...1060

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 145.0...165.0
1000 s: (140.0...170.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 375
Rack travel in mm : 5.30...5.50
Del. quantity cm³/ : 14.0...18.0
1000 s: (11.5...20.5)

Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: C.D.C # 3915570

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Adjust stop lever to 0.5...1.0 mm
before stop.

Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 l 8
Edition : 08.07.91
Replaces : 2.5.90
Test oil : ISO-4113

Combination no. : 0 400 866 150

Injection pump
Pump designation : PES6A100D320/3RS2763
EP type number : 0 410 806 006
Governor
Governor design. : RSV400...1100A0C2190
-45R
Governor no. : 0 420 233 253

Customer-spec. information
Customer : C.D.C.

Engine : 6CT 8.3

1st version kW : 134.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm³/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 375.0

Rack travel in mm : 5.9...6.1

Del.quantity cm³/ : 2.3...2.7
100 s: (2.0...2.9)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 101.5...103.5

1000 : (99.5...105.5)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 51...59

Testing:

1st rack travel in: 9.90
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1230...1240
3rd rack travel in: 4.00
Speed rpm : 1230...1260
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 31...39
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 5.5

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 375
Rack travel in mm : 5.90...6.10

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.90...11.00
2nd speed rpm : 750
Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 750
Del.quantity cm³/ : 114.5...118.5
1000 s: (112.5...120.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.90
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...170.0
1000 s: (145.0...175.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 375
Rack travel in mm : 5.90...6.10
Del.quantity cm³/ : 23.0...27.0
1000 s: (20.5...29.5)

Spread cm³ : 6.00
1000 s: (8.00)

Remarks:
: C.D.C. # 3915974

Adjust stop lever to 0.5...1.0 mm
before stop.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 p
Edition : 08.07.91
Replaces : 13.5.91
Test oil : ISO-4113

Combination no. : 0 400 866 153

Injection pump
Pump designation : PES6A100D320/3RS2763
EP type number : 0 410 806 006
Governor
Governor design. : RSV400...950AOC2238-1R
Governor no. : 0 420 233 255

Customer-spec. information
Customer : C.D.C.

Engine : 6CT 8.3

1st version kW : 145.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 12.0...12.2

100 s: (11.8...12.4)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0
Rack travel in mm : 5.2...5.4
Del.quantity cm3/ : 1.3...1.7
100 s: (1.0...1.9)
Spread cm3 : 0.6
100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Aneroid pressure h: 900

Del.quantity : 120.5...122.5

1000 : (118.5...124.5)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 37...45

Testing:

1st rack travel in: 11.10
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1065...1075
3rd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1150
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.20...5.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.10...12.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...10.80
2nd pressure hPa : 220
Rack travel in m: 11.10...11.20
3rd pressure hPa : 305
Rack travel in m: 11.40...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 89.5...93.5
1000 s: (87.5...95.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 990...1000

L23

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...170.0
1000 s: (145.0...175.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: C.D.C # 3917577

Adjust stop lever to 0.5...1.0 mm
before stop.

Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a77
 Edition : 08.07.91
 Replaces : 10.4.91
 Test oil : ISO-4113
 Combination no. : 0 400 866 160
 Injection pump
 Pump designation : PES6A100D320/3RS2691
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV470...1100AOC2190
 -48R
 Governor no. : 0 420 233 262

Customer-spec. information
 Customer : C.D.C.

Engine : 6CT830

1st version kW : 150.6
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 11.5...11.7

100 s: (11.3...11.9)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 470.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 1.6...2.0

100 s: (1.4...2.3)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 115.0...117.0

1000 : (113.0...119.0)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 11.10
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1235...1245
3rd rack travel in: 4.00
Speed rpm : 1235...1265
4th rack travel in: 1325
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 26...34
Setting point w/out bumper spring
Speed rpm : 470
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 470
Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.10...12.20
2nd speed rpm : 750
Rack travel in m: 13.00...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del. quantity cm³/ : 128.0...132.0
1000 s: (126.0...134.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 470
Rack travel in mm : 5.70...5.90
Del. quantity cm³/ : 16.5...20.5
1000 s: (14.0...23.0)

Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: C.D.C. # 3917962

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm
before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a83
Edition : 08.07.91
Replaces : 5.10.90
Test oil : ISO-4113

Combination no. : 0 400 866 167

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...1100A0C2190
-50R
Governor no. : 0 420 233 276

Customer spec. information
Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : 138.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
(2.75...2.95)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 10.9...11.1

100 s: (10.7...11.3)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0
Rack travel in mm : 5.7...5.9
Del.quantity cm3/ : 1.7...2.1
100 s: (1.4...2.3)
Spread cm3 : 0.6
100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Del.quantity : 109.5...111.5
1000 : (107.5...113.5)
Spread cm3 : 4.00
1000 : (6.50)

RATED SPEED

1st version
Control lever
position degrees: 48...56

Testing:

1st rack travel in: 10.40
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1215...1245
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 27...35
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.40...11.50
2nd speed rpm : 750
Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm³/ : 127.5...131.5
1000 s: (125.5...133.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.40
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
1000 s: (135.0...165.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.70...5.90
Del.quantity cm³/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: C.D.C # 3919497

Adjust stop lever to 0.5...1.0 mm
before stop.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a84
 Edition : 08.07.91
 Replaces : 18.2.91
 Test oil : ISO-4113

Combination no. : 0 400 866 168

Injection pump
 Pump designation : PES6A100D320/3RS2691
 EP type number : 9 410 230 02
 Governor
 Governor design. : RSV400...1100A0C2190
 -52R
 Governor no. : 0 420 233 278

Cust. part no. : 3917456

Customer-spec. information
 Customer : C.D.C.

Engine : 6 CTA 8.3ltr

1st version kW : 174.5
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
 : (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 12.7...12.9

100 s: (12.5...13.1)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 127.0...129.0

1000 : (125.0...131.0)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 11.70
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1210...1220
3rd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.80...6.00

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 155.0...175.0
1000 s: (150.0...180.0)
Rack travel in mm : 16.20...16.40

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.80...6.00
Del.quantity cm³/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: C.D.C # 3917456

Adjust stop lever to 0.5...1.0 mm
before stop.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a96
 Edition : 08.07.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 866 170
 Injection pump
 Pump designation : PES6A100D320/3RS2691
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV400...1100AOC2190
 -53R
 Governor no. : 0 420 233 284

Customer-spec. information
 Customer : C.D.C.

Engine : 6 CT 8.3ltr

1st version kW : 173.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

MO2

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 425.0
 Rack travel in mm : 5.3...5.5
 Del.quantity cm3/ : 1.6...2.0
 100 s: (1.3...2.2)
 Spread cm3 : 0.6
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 9.70
Speed rpm : 1170...1180
2nd rack travel in: 4.00
Speed rpm : 1235...1245
3rd rack travel in: 4.00
Speed rpm : 1230...1260
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 25...33
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 4.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.30...5.50

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.70
Speed rpm : 1170...1180

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: C.D.C # 3919767

Adjust stop lever to 0.5...1.0 mm
before stop.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a93
 Edition : 08.07.91
 Replaces : 13.5.91
 Test oil : ISO-4113
 Combination no. : 0 400 866 171
 Injection pump
 Pump designation : PES6A100D320/3RS2691
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV400...1050AOC2190
 -54R
 Governor no. : 0 420 233 285

Customer-spec. information
 Customer : C.D.C

Engine : 6 CT 8.3
 1st version kW : 154.4
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 101
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

MD4

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050
 Rack travel in mm : 12.40...12.50
 Del.quantity cm3/ : 12.5...12.7
 100 s: (12.3...12.9)
 Spread cm3 : 0.4
 100 s: (0.6)

2nd speed rpm : 400.0
 Rack travel in mm : 5.5...5.7
 Del.quantity cm3/ : 1.5...1.9
 100 s: (1.3...2.2)
 Spread cm3 : 0.6
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Del.quantity : 125.5...127.5
 1000 : (123.5...129.5)
 Spread cm3 : 4.00
 1000 : (6.50)

RATED SPEED

1st version
 Control lever
 position degrees: 38...46

Testing:

1st rack travel in: 11.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1130...1160
3rd rack travel in: 4.00
Speed rpm : 1135...1165
4th rack travel in: 1275
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 19...27
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.50...5.70

BREAKAWAY

1st version
1mm rack travel less than

full load rack travel: 11.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 145.0...165.0
1000 s: (140.0...170.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.50...5.70
Del. quantity cm³/ : 15.5...19.5
1000 s: (13.0...22.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: C.D.C # 3919768

Adjust stop lever to 0.5...1.0 mm
before stop.

Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a94
Edition : 08.07.91
Replaces : 13.5.91
Test oil : ISO-4113

Combination no. : 0 400 866 172

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...1250AOC2190
-55R
Governor no. : 0 420 233 286

Customer-spec. information
Customer : C.D.C.

Engine : 6 CTA 8.3

1st version kW : 131.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 10.3...10.5

100 s: (10.1...10.7)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.2...1.6

100 s: (1.0...1.9)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 103.5...105.5

1000 : (101.5...107.5)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control Lever

position degrees: 51...59

Testing:

1st rack travel in: 9.90
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1360...1390
4th rack travel in: 1450
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 26...34
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.20...5.40

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 145.0...165.0
1000 s: (140.0...170.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 12.5...16.5
1000 s: (10.0...19.5)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: C.D.C # 3920811

Adjust stop lever to 0.5...1.0 mm
before stop.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 5,6 a 9
 Edition : 26.07.91
 Replaces : 31.7.90
 Test oil : ISO-4113

Combination no. : 0 400 874 238C

Injection pump
 Pump designation : PES4A95D410RS2685
 EP type number : 0 410 894 996
 Governor
 Governor design. : RSV400...1000A1C2187
 L
 Governor no. : 0 420 232 387

Customer-spec. information
 Customer : LIEBHERR

Engine : D904 T

1st version kW : 100.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 40...45

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 990

Rack travel in mm : 14.20...14.30

Del.quantity cm³/ : 13.7...13.9

100 s: (13.5...14.1)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 415.0

Rack travel in mm : 6.3...6.5

Del.quantity cm³/ : 1.1...1.7

100 s: (0.8...1.9)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 990

Del.quantity : 137.0...139.0

1000 : (135.0...141.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 93...101

Testing:

1st rack travel in: 13.20
Speed rpm : 1030...1040
2nd rack travel in: 4.00
Speed rpm : 1060...1090
4th rack travel in: 1225
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 67...75
Setting point w/out bumper spring
Speed rpm : 415
Rack travel in mm : 5.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 415
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00
Speed rpm : 410...470

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 990
Rack travel in m: 14.20...14.30
2nd speed rpm : 500
Rack travel in m: 14.20...14.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 129.5...132.5
1000 s: (127.0...135.0)
Speed rpm : 750
Del.quantity cm3/ : 134.0...137.0
1000 s: (131.5...139.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.20
Speed rpm : 1030...1040

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 415
Rack travel in mm : 6.30...6.50
Del.quantity cm3/ : 11.0...17.0
1000 s: (8.5...19.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 5,6 a11
 Edition : 26.07.91
 Replaces : 31.7.90
 Test oil : ISO-4113

Combination no. : 0 400 874 238L

Injection pump
 Pump designation : PES4A95D41ORS2685
 EP type number : 0 410 894 996
 Governor
 Governor design. : RSV400...1000A1C2187
 L
 Governor no. : 0 420 232 387

Customer-spec. information
 Customer : LIEBHERR

Engine : D904 T

1st version kW : 100.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 40...45

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 990

Rack travel in mm : 14.20...14.30

Del.quantity cm3/ : 13.7...13.9

100 s: (13.5...14.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 415.0
 Rack travel in mm : 6.3...6.5
 Del.quantity cm3/ : 1.1...1.7
 100 s: (0.8...1.9)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 990

Del.quantity : 137.0...139.0

1000 : (135.0...141.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 89...97

Testing:

1st rack travel in: 13.20
Speed rpm : 1030...1040
2nd rack travel in: 4.00
Speed rpm : 1045...1075
3rd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1245
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 63...71
Setting point w/out bumper spring
Speed rpm : 415
Rack travel in mm : 5.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 415
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00
Speed rpm : 525...585

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 990
Rack travel in mm : 14.20...14.30
2nd speed rpm : 500
Rack travel in mm : 14.20...14.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del. quantity cm³/ : 129.5...132.5
1000 s: (127.0...135.0)
Speed rpm : 750
Del. quantity cm³/ : 134.0...137.0
1000 s: (131.5...139.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.20
Speed rpm : 1030...1040

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 415
Rack travel in mm : 6.30...6.50
Del. quantity cm³/ : 11.0...17.0
1000 s: (8.5...19.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 d 6
Edition : 18.06.91
Replaces : 19.3.91
Test oil : ISO-4113

Combination no. : 0 400 876 383

Injection pump
Pump designation : PES6A100D410RS2762-1
EP type number : 0 410 806 008
Governor
Governor design. : RSV400...1100A2C2204
-8L
Governor no. : 0 420 232 551

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076TDW02

1st version kW : 128.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 190...200

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05
(2.90...3.10)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 2.9...3.3

100 s: (2.7...3.5)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 100.5...102.5

1000 : (98.5...104.5)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever
position degrees: 40...48

Testing:

1st rack travel in: 9.70
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1195...1205
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 15...23
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.80...6.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.70...10.80
2nd speed rpm : 700
Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm³/ : 131.5...135.5
1000 s: (129.5...137.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 400

M13

Rack travel in mm : 5.80...6.00
Del.quantity cm³/ : 29.0...33.0
1000 s: (27.0...35.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47356
Start-of-delivery mark = 13,5° after
start of delivery cyl. 1.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 j 3
Edition : 26.07.91
Replaces : 18.2.91
Test oil : ISO-4113

Combination no. : 0 400 876 388

Injection pump
Pump designation : PES6A95D410RS2797
EP type number : 0 410 896 900
Governor
Governor design. : RSV350...1200A1C1154
-2L
Governor no. : 0 420 232 561

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 81.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
: (3.15...3.35)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.80...9.90

Del.quantity cm3/ : 5.4...5.6

100 s: (5.2...5.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 9.4...10.0

Del.quantity cm3/ : 0.8...1.4

100 s: (0.5...1.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 54.5...56.5

1000 : (52.5...58.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 108...116

Testing:

1st rack travel in: 8.80

Speed rpm : 1240...1245

2nd rack travel in: 4.00

Speed rpm : 1263...1280

3rd rack travel in: 4.00

Speed rpm : 1300...1330
4th rack travel in: 1400
Speed rpm : 0.30...1.40
5th rack travel in: 1255...1265
Speed rpm : 8.80

Unimog

LOW IDLE 1
Control lever
position degrees: -3
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 9.70

Testing:
Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 9.40...10.00
Rack travel in mm : 2.00
Speed rpm : 495...555

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 9.80...9.90
2nd speed rpm : 500
Rack travel in m: 11.10...11.30
3rd speed rpm : 850
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm3/ : 48.0...51.0
1000 s: (45.5...53.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.80
Speed rpm : 1240...1245

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 92.0...102.0
1000 s: (89.0...105.0)
Rack travel in mm : 16.10...16.50

Remarks:

:

APPLICATION

M15

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 d 7
Edition : 18.06.91
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 876 391
Injection pump
Pump designation : PES6A100D410RS2762-1
EP type number : 0 410 806 008
Governor
Governor design. : RSV425...1100A2C2225
-5L
Governor no. : 0 420 232 566

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076ARW-09

1st version kW : 145.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness : 6.00X2.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05
: (2.90...3.10)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 11.4...11.6

100 s: (11.2...11.8)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 2.6...3.0

100 s: (2.4...3.2)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 114.0...116.0

1000 : (112.0...118.0)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 10.80
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1205...1215
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.80...11.90
2nd speed rpm : 650
Rack travel in m: 13.70...13.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.70...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.70...11.90
2nd pressure hPa : 535
Rack travel in m: 12.30...12.40
3rd pressure hPa : 720
Rack travel in m: 13.30...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 650
Del.quantity cm3/ : 147.5...150.5
1000 s: (145.0...153.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 129.0...133.0
1000 s: (126.0...136.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.80
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...120.0
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.70...5.90
Del.quantity cm3/ : 26.0...30.0
1000 s: (24.0...32.0)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47502

Starting/full-load transition speed
from holding magnet = 450 1/min.

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Start-of-delivery mark = 13,5° after
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE 12,0 h
Edition : 05.07.91
Replaces : 1.2.91
Test oil : ISO-4113

Combination no. : 0 401 838 709

Injection pump
Pump designation : PE8P110A120LS3271
EP type number : 0 411 818 723
Governor
Governor design. : RQV250...1100PA951-2
Governor no. : 0 421 813 908

Customer-spec. information
Customer : SNF

Engine : WD815.66

1st version kW : 270.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 4- 8- 6- 3-
7- 2

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.40...13.50

Del.quantity cm³/ : 17.4...17.6

100 s: (17.1...17.9)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 4.1...4.3

Del.quantity cm³/ : 1.7...2.3

100 s: (1.5...2.5)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 0.90...1.30

2nd speed rpm : 485
travel mm : 3.20...3.80

3rd speed rpm : 640
travel mm : 4.20...4.80

4th speed rpm : 1145
travel mm : 8.40...8.60

5th speed rpm : 1220
travel mm : 9.80...10.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 174.0...176.0

1000 : (171.0...179.0)

Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 12.40
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: ?
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 4.2

Testing:
Speed rpm : 100
Minimum rack travel: 4.60
Speed rpm : 250
Rack travel in mm : 4.10...4.30

CONSTANT REGULATION
Speed rpm : 250...390

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 13.40...13.50
2nd speed rpm : 600
Rack travel in m: 13.40...13.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.40...13.50

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.10
2nd pressure hPa : 600
Rack travel in m: 12.50...12.60
3rd pressure hPa : 380
Rack travel in m: 10.80...11.00

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm³/ : 186.0...190.0
1000 s: (183.0...193.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 117.0...119.0
1000 s: (114.0...122.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.40
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 220.0...260.0
1000 s: (216.0...264.0)
Rack travel in mm : 20.00...21.00

Remarks:

Delivery-valve spring pre-tension =
1.80...2.00 mm.
Permissible alteration from 1.60...2.30
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE 12,0 i
Edition : 05.07.91
Replaces : 1.2.91
Test oil : ISO-4113

Combination no. : 0 401 838 710

Injection pump
Pump designation : PE8P110A120LS3271
EP type number : 0 411 818 723
Governor
Governor design. : RQ300/1100PA958-2
Governor no. : 0 421 801 570

Customer-spec. information
Customer : SNF

Engine : WD815.66

1st version kW : 270.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00

M20

Firing order : 1- 5- 4- 8- 6- 3-
7- 2

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 17.4...17.6

100 s: (17.1...17.9)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del.quantity cm3/ : 1.7...2.3

100 s: (1.5...2.5)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 174.0...176.0

1000 : (171.0...179.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 12.40

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1200...1230
4th rack travel in: 1350
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.2

Testing:

Speed rpm : 100
Minimum rack travel: 5.70
Speed rpm : 300
Rack travel in mm : 4.10...4.30
Rack travel in mm : 2.00
Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 13.40...13.50
2nd speed rpm : 600
Rack travel in m: 13.40...13.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.40...13.50

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.10
2nd pressure hPa : 600
Rack travel in m: 12.50...12.60
3rd pressure hPa : 380
Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm³/ : 186.0...190.0
1000 s: (183.0...193.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 117.0...119.0
1000 s: (114.0...122.0)

BREAKAWAY

M21

1st version
1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 220.0...260.0
1000 s: (216.0...264.0)
Rack travel in mm : 20.00...21.00

Remarks:

Delivery-valve spring pre-tension =
1.80...2.00 mm.
Permissible alteration from 1.60...2.30
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE 9,7 f
Edition : 02.08.91
Replaces : 19.5.88
Test oil : ISO-4113

Combination no. : 0 401 846 555

Injection pump
Pump designation : PE6P110A72ORS516
EP type number : 0 411 816 176
Governor
Governor design. : RQV250...1100PA413-3
Governor no. : 0 421 813 695

Customer-spec. information
Customer : STEYR

Engine : WD615.64

1st version kW : 175.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.40...14.50

Del.quantity cm³/ : 14.2...14.4

100 s: (13.9...14.7)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 1.9...2.4

100 s: (1.6...2.6)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 0.90...1.30

2nd speed rpm : 350
travel mm : 1.70...2.30

3rd speed rpm : 650
travel mm : 4.00...4.60

4th speed rpm : 1150
travel mm : 8.40...8.60

5th speed rpm : 1250
travel mm : 9.60...10.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 142.0...144.0

1000 : (139.0...147.0)

Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 104...112

Testing:

1st rack travel in: 13.40
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1255...1285
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 69...77

Testing:

Speed rpm : 100
Minimum rack trave: 8.00
Speed rpm : 250
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 250...370

TORQUE CONTROL

Dimension a mm : 0.80
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.40...14.50
2nd speed rpm : 860
Rack travel in m: 15.20...15.40
3rd speed rpm : 1000
Rack travel in m: 14.70...14.90
4th speed rpm : 700
Rack travel in m: 15.60...15.80

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 15.60...15.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 13.30...13.50
2nd pressure hPa : 575
Rack travel in m: 15.00...15.10
3rd pressure hPa : 270

Rack travel in m: 13.60...13.80

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm³/ : 160.0...164.0
 1000 s: (157.0...167.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 116.0...118.0
 1000 s: (113.0...121.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 175.0...195.0
 1000 s: (171.0...199.0)
Rack travel in mm : 16.50...17.50

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 m
Edition : 21.06.91
Replaces : 14.12.90
Test oil : ISO-4113

Combination no. : 0 401 846 566

Injection pump
Pump designation : PE6P110A320RS526
EP type number : 0 411 816 178
Governor
Governor design. : RQ275/1000PA818-3
Governor no. : 0 421 801 534

Customer-spec. information
Customer : DAF

Engine : LT 160 G

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 13.00...14.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
& maximum rack tra: 13.0...14.0
Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.20...14.30

Del.quantity cm³/ : 15.6...15.8

100 s: (15.3...16.0)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2

Del.quantity cm³/ : 2.5...3.0

100 s: (2.3...3.3)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 156.0...158.0

1000 : (153.5...160.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 15.8

Testing:

1st rack travel in: 12.40

Speed rpm : 1030...1045

2nd rack travel in: 4.00

Speed rpm : 1090...1120
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 8.1

Testing:

Speed rpm : 100
Minimum rack travel: 10.70
Speed rpm : 300
Rack travel in mm : 8.00...8.20
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 980
Rack travel in m: 13.40...13.60
2nd speed rpm : 600
Rack travel in m: 14.40...14.60
3rd speed rpm : 750
Rack travel in m: 14.00...14.10
4th speed rpm : 825
Rack travel in m: 13.60...13.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.20...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 12.70...12.90
2nd pressure hPa : 290
Rack travel in m: 13.80...13.90
3rd pressure hPa : 260
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 980
Del.quantity cm3/ : 136.0...138.0
1000 s: (132.0...142.0)
Aneroid pressure h: -

Speed rpm : 600
Del.quantity cm3/ : 122.0...124.0
1000 s: (119.5...126.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1030...1045

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 280.0...320.0
1000 s: (276.0...324.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 8.00...8.20
Del.quantity cm3/ : 25.5...30.5
1000 s: (23.0...33.0)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0 o6
 Edition : 02.08.91
 Replaces : 24.10.90
 Test oil : ISO-4113
 Combination no. : 0 401 846 745
 Injection pump
 Pump designation : PE6P110A32ORS3080
 EP type number : 0 411 816 722
 Governor
 Governor design. : RQV250...1100PA919
 Governor no. : 0 421 813 776

Customer-spec. information
 Customer : VOLVO

Engine : TD 100 G

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...174

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X-600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 16.7...16.9

100 s: (16.4...17.2)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 3.9...4.1

Del.quantity cm3/ : 1.5...1.9

100 s: (1.2...2.1)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.10...1.30

2nd speed rpm : 500

travel mm : 4.10...4.90

3rd speed rpm : 700

travel mm : 6.30...6.70

4th speed rpm : 950

travel mm : 6.30...6.70

5th speed rpm : 1100

travel mm : 7.00...7.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 167.0...169.0

1000 : (164.0...172.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 11.30
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 60...68

Testing:
Speed rpm : 100
Minimum rack travel: 5.30
Speed rpm : 250
Rack travel in mm : 3.90...4.10

CONSTANT REGULATION
Speed rpm : 270...380

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.30...12.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.00
2nd pressure hPa : 610
Rack travel in m: 12.10...12.20
3rd pressure hPa : 280
Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 127.0...129.0
1000 s: (127.0...129.0)

BREAKAWAY

1st version

M27

1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 160.0...190.0
1000 s: (156.0...196.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 3.90...4.10
Del.quantity cm3/ : 15.0...19.0
1000 s: (12.5...21.5)
Spread cm3 : 3.00
1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 h
Edition : 28.06.91
Replaces : 28.3.91
Test oil : ISO-4113

Combination no. : 0 401 846 826

Injection pump
Pump designation : PE6P120A32ORS3178
EP type number : 0 411 826 752
Governor
Governor design. : RQV250...1025PA921-2
Governor no. : 0 421 813 785

Customer-spec. information
Customer : VOLVO

Engine : TD122FS

1st version kW : 287.0
Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 25.3...25.5

100 s: (25.0...25.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.8...5.1

Del.quantity cm3/ : 1.7...2.2
100 s: (1.5...2.5)

Spread cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.00...1.40

2nd speed rpm : 450
travel mm : 3.60...4.20

3rd speed rpm : 800
travel mm : 6.30...6.70

4th speed rpm : 1070
travel mm : 8.00...8.20

5th speed rpm : 1180
travel mm : 9.90...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 253.0...255.0
1000 : (250.0...258.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control Lever
position degrees: 116...124

Testing:

1st rack travel in: 13.00
Speed rpm : 1055...1065
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 59...67

Testing:

Speed rpm : 100
Minimum rack travel: 6.40
Speed rpm : 250
Rack travel in mm : 4.80...5.10

CONSTANT REGULATION

Speed rpm : 250...400

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.30...10.50
2nd pressure hPa : 90
Rack travel in m: 10.50...10.60
3rd pressure hPa : 760
Rack travel in m: 13.50...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 163.0...165.0
1000 s: (160.0...168.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1055...1065

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 270.0...310.0
1000 s: (266.0...314.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.80...5.10
Del.quantity cm3/ : 17.5...22.5
1000 s: (15.0...25.0)
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 h2
Edition : 05.07.91
Replaces : 15.3.90
Test oil : ISO-4113

Combination no. : 0 401 846 827

Injection pump
Pump designation : PE6P120A32ORS3178
EP type number : 0 411 826 752
Governor
Governor design. : RQV250...950PA921-3
Governor no. : 0 421 813 786

Customer-spec. information
Customer : VOLVO

Engine : TD122F

1st version kW : 257.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.6...4.8

Del.quantity cm3/ : 1.7...2.2
100 s: (1.4...2.5)

Spread cm3 : 0.5
100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.00...1.40

2nd speed rpm : 450
travel mm : 3.60...4.20

3rd speed rpm : 700
travel mm : 6.30...6.70

4th speed rpm : 985
travel mm : 8.10...8.30

5th speed rpm : 1060
travel mm : 9.40...9.80

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1030

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 229.0...231.0
1000 : (226.0...234.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 12.00
Speed rpm : 980...990
2nd rack travel in: 4.00
Speed rpm : 1060...1090
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 60...68

Testing:
Speed rpm : 100
Minimum rack travel: 6.20
Speed rpm : 250
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION
Speed rpm : 250...380

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.00...13.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.20
2nd pressure hPa : 90
Rack travel in m: 10.20...10.30
3rd pressure hPa : 600
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 163.0...165.0
1000 s: (160.0...168.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 980...990

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 270.0...310.0
1000 s: (266.0...314.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.60...4.80
Del.quantity cm3/ : 17.5...22.5
1000 s: (14.5...25.5)
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

:
Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,3 p 4
 Edition : 26.07.91
 Replaces : 9.11.89
 Test oil : ISO-4113

Combination no. : 0 401 846 898

Injection pump
 Pump designation : PE6P110A72ORS3225
 EP type number : 0 411 816 763
 Governor
 Governor design. : RQV275...1200PA910
 Governor no. : 0 421 813 746

Customer-spec. information
 Customer : DAF

Engine : HS 200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del. quantity cm³/ : 12.4...12.6
 100 s: (12.1...12.8)

Spread cm³ : 0.4
 100 s: (0.7)

2nd speed rpm : 275.0
 Rack travel in mm : 7.2...7.4
 Del. quantity cm³/ : 1.4...1.9
 100 s: (1.1...2.1)

Spread cm³ : 0.4
 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.40

2nd speed rpm : 450
 travel mm : 2.90...3.30

3rd speed rpm : 800
 travel mm : 4.70...5.10

4th speed rpm : 1200
 travel mm : 7.80...8.00

5th speed rpm : 1500
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1235

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del. quantity : 124.0...126.0
 1000 : (121.5...128.5)

Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:

1st rack travel in: 11.50
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1345...1375
4th rack travel in: 1450
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 78...86

Testing:

Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 275
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rpm : 280...400

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.90...11.00
2nd pressure hPa : 360
Rack travel in m: 12.10...12.20
3rd pressure hPa : 270
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600
Del.quantity cm³/ : 87.0...89.0
1000 s: (84.5...91.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

N05

Speed rpm : 1240...1250

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.70...4.90

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 d1
Edition : 05.07.91
Replaces : 22.3.91
Test oil : ISO-4113

Combination no. : 0 401 846 901

Injection pump
Pump designation : PE6P120A320RS3240-1
EP type number : 0 411 826 787
Governor
Governor design. : RQV250...950PA921-17
Governor no. : 0 421 813 800

Customer-spec. information
Customer : VOLVO-TRUCK

Engine : TD122FH

1st version kW : 269.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 22.3...22.5

100 s: (22.0...22.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.5...6.7

Del.quantity cm3/ : 1.7...2.2
100 s: (1.5...2.5)

Spread cm3 : 0.5
100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.00...1.40

2nd speed rpm : 450
travel mm : 3.60...4.20

3rd speed rpm : 700
travel mm : 6.30...6.70

4th speed rpm : 985
travel mm : 8.10...8.30

5th speed rpm : 1060
travel mm : 9.40...9.80

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1030

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 223.0...225.0
1000 : (220.0...228.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 11.70
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1050...1080
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 60...68

Testing:
Speed rpm : 100
Minimum rack travel: 8.10
Speed rpm : 250
Rack travel in mm : 6.50...6.70

CONSTANT REGULATION
Speed rpm : 250...380

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.70...12.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.60...9.80
2nd pressure hPa : 85
Rack travel in m: 9.80...9.90
3rd pressure hPa : 470
Rack travel in m: 12.10...12.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 154.0...156.0
1000 s: (151.0...159.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 270.0...310.0
1000 s: (266.0...314.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.50...6.70
Del.quantity cm3/ : 17.5...22.5
1000 s: (15.0...25.0)
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,2 a
Edition : 26.07.91
Replaces : 19.10.90
Test oil : ISO-4113

Combination no. : 0 401 846 935

Injection pump
Pump designation : PE6P120A320RS3262
EP type number : 0 411 826 797
Governor
Governor design. : RQV300...1050PA232-4
Governor no. : 0 421 813 883

Customer-spec. information
Customer : VME

Engine : TD102 GC

1st version kW : 180.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 9.20...9.30

Del.quantity cm3/ : 16.9...17.1

100 s: (16.6...17.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 3.2...3.7

100 s: (2.9...3.9)

Spread cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.30...1.70

2nd speed rpm : 500
travel mm : 2.70...3.30

3rd speed rpm : 800
travel mm : 4.90...5.50

4th speed rpm : 1100
travel mm : 7.60...7.70

5th speed rpm : 1180
travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 169.0...171.0
1000 : (166.0...174.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:
1st rack travel in: 8.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 80...88

Testing:
Speed rpm : 100
Minimum rack trave: 6.90
Speed rpm : 300
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION
Speed rpm : 300...410

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 9.20...9.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 160
Rack travel in m: 9.10...9.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 164.0...166.0
1000 s: (161.0...169.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 160.0...190.0
1000 s: (156.0...194.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 32.0...37.0
1000 s: (29.5...39.5)
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

APPLICATION

Loading machine

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 5,9 a
 Edition : 26.07.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 937
 Injection pump
 Pump designation : PE6P110A32ORS3266
 EP type number : 0 412 816 777
 Governor
 Governor design. : RQV300...1300PA966K
 Governor no. : 0 421 815 277

Customer-spec. information
 Customer : VOLVO-TRUCK

Engine : TD63ES

1st version kW : 155.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.40...2.50
 : (2.30...2.50)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 780

Rack travel in mm : 12.00...12.10

Del.quantity cm³/ : 13.1...13.3

100 s: (12.8...13.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 330.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 1.7...2.1

100 s: (1.4...2.4)

Spread cm³ : 0.7

100 s: (1.1)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 330
 travel mm : 1.80...2.20

2nd speed rpm : 500
 travel mm : 3.20...3.80

3rd speed rpm : 850
 travel mm : 4.60...5.20

4th speed rpm : 1250
 travel mm : 7.90...8.10

5th speed rpm : 1350
 travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1420

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 780

Aneroid pressure h: 900

Del.quantity : 131.0...133.0
1000 : (128.0...136.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 11.40
Speed rpm : 1360...1370
2nd rack travel in: 4.00
Speed rpm : 1430...1460
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 72...80

Testing:
Speed rpm : 100
Minimum rack travel: 6.90
Speed rpm : 330
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION
Speed rpm : 330...600

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 12.40...12.50
2nd speed rpm : 780
Rack travel in m: 12.00...12.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1300
Pressure hPa : 900
Rack travel mm : 12.40...12.50

Measurement
Speed 1/min : 1300

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 110
Rack travel in m: 9.20...9.30
3rd pressure hPa : 725
Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1300
Del.quantity cm3/ : 128.0...134.0
1000 s: (126.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 780
Del.quantity cm3/ : 73.0...75.0
1000 s: (70.0...78.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.40
Speed rpm : 1360...1370

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...130.0
1000 s: (96.0...134.0)
Rack travel in mm : 10.00...10.50

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 5,9 a 1
Edition : 02.08.91
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 846 938
Injection pump
Pump designation : PE6P110A32ORS3266
EP type number : 0 412 816 777
Governor
Governor design. : RQV300...1300PA966-1
K
Governor no. : 0 421 815 278

Customer-spec. information
Customer : VOLVO-TRUCK

Engine : TD63E

1st version kW : 133.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.40...2.50
: (2.30...2.50)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 780

Rack travel in mm : 10.00...10.10

Del.quantity cm3/ : 9.7...9.9

100 s: (9.4...10.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 330.0
Rack travel in mm : 5.0...5.2
Del.quantity cm3/ : 1.7...2.1
100 s: (1.4...2.4)
Spread cm3 : 0.7
100 s: (1.1)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 330
travel mm : 1.80...2.20
2nd speed rpm : 500
travel mm : 3.20...3.80
3rd speed rpm : 850
travel mm : 4.60...5.20
4th speed rpm : 1250
travel mm : 7.90...8.10
5th speed rpm : 1350
travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1420
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 780

Aneroid pressure h: 900
Del.quantity : 97.0...99.0
1000 : (94.0...102.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:

1st rack travel in: 10.00
Speed rpm : 1360...1370
2nd rack travel in: 4.00
Speed rpm : 1420...1450
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 72...80

Testing:

Speed rpm : 100
Minimum rack travel: 6.60
Speed rpm : 330
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 330...600

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 11.00...11.10
2nd speed rpm : 780
Rack travel in m: 10.00...10.10
3rd speed rpm : 1050
Rack travel in m: 10.50...10.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1300
Pressure hPa : 900
Rack travel mm : 11.00...11.10

Measurement

Speed 1/min : 1300

1st pressure hPa : -
Rack travel in m: 8.50...8.70
2nd pressure hPa : 110
Rack travel in m: 8.70...8.80

3rd pressure hPa : 480
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1300
Del.quantity cm3/ : 115.0...121.0
1000 s: (113.0...123.0)
Spread cm3 : 8.00
1000 s: (12.)
Aneroid pressure h: 900
Speed rpm : 1050
Del.quantity cm3/ : 109.0...115.0
1000 s: (106.0...118.0)
Aneroid pressure h: -
Speed rpm : 780
Del.quantity cm3/ : 73.0...75.0
1000 s: (70.0...78.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1360...1370

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 95.0...125.0
1000 s: (91.0...129.0)
Rack travel in mm : 9.60...10.10

LOW IDLE

Speed rpm : 330
Rack travel in mm : 5.00...5.20
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.0...24.0)
Spread cm3 : 7.00
1000 s: (11.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 x 2
Edition : 28.06.91
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 846 946

Injection pump
Pump designation : PE6P110A32QLS3851-1
EP type number : 0 411 818 780
Governor
Governor design. : RQ300/1050PA1007-1
Governor no. : 0 421 801 589

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 151.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
: (4.35...4.55)
Rack travel in mm : 9.00...12.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm³/ : 11.8...12.0

100 s: (11.5...12.2)

Spread cm³ : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 6.5...7.1

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm³ : 0.6

100 s: (1.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 11.8...120.0

1000 : (115.5...122.5)

Spread cm³ : 8.50

1000 : (13.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 13.5

Testing:

1st rack travel in: 10.10
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.8

Testing:

Speed rpm : 200
Minimum rack trave: 8.40
Speed rpm : 300
Rack travel in mm : 6.50...7.10
Rack travel in mm : 2.00
Speed rpm : 390...430

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 117.0...123.0
1000 s: (114.5...125.5)
Spread cm3 : 11.00
1000 s: (14.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 d2
 Edition : 26.07.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 949
 Injection pump
 Pump designation : PE6P120A320RS3240
 EP type number : 0 411 826 786
 Governor
 Governor design. : RQV250...1025PA921
 -22
 Governor no. : 0 421 813 942

Customer-spec. information
 Customer : VOLVO-TRUCK

Engine : TD122FA

1st version kW : 291.0
 Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 25.1...25.3

100 s: (24.8...25.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.5...6.7

Del.quantity cm3/ : 1.7...2.2

100 s: (1.5...2.5)

Spread cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 450

travel mm : 3.60...4.20

3rd speed rpm : 800

travel mm : 6.30...6.70

4th speed rpm : 1070

travel mm : 8.00...8.20

5th speed rpm : 1180

travel mm : 9.90...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200
Del.quantity : 251.0...253.0
1000 : (248.0...256.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 12.60
Speed rpm : 1065...1075
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 60...68

Testing:
Speed rpm : 100
Minimum rack travel: 8.10
Speed rpm : 250
Rack travel in mm : 6.50...6.70

CONSTANT REGULATION
Speed rpm : 250...380

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 13.60...13.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.10...9.30
2nd pressure hPa : 90
Rack travel in m: 9.30...9.40
3rd pressure hPa : 1000
Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700

Del.quantity cm3/ : 136.0...138.0
1000 s: (133.0...141.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.60
Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 270.0...310.0
1000 s: (266.0...314.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.50...6.70
Del.quantity cm3/ : 17.5...22.5
1000 s: (15.0...25.0)
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,3 p11
 Edition : 26.07.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 953
 Injection pump
 Pump designation : PE6P110A720RS3225Z
 EP type number : 0 411 816 782
 Governor
 Governor design. : RQ275/1200PA913-1
 Governor no. : 0 421 801 549

Customer-spec. information
 Customer : DAF

Engine : HS 200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.70...12.80

Del.quantity cm³/ : 12.9...13.1

100 s: (12.6...13.3)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 7.2...7.4

Del.quantity cm³/ : 1.4...1.9

100 s: (1.1...2.1)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 129.0...131.0

1000 : (126.5...133.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 11.70

Speed rpm : 1235...1250

2nd rack travel in: 4.00

Speed rpm : 1320...1350

4th rack travel in: 1450

Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 275
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 13.70...13.80
2nd speed rpm : 1200
Rack travel in m: 13.60...13.80

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 10.90...11.10

2nd pressure hPa : 360

Rack travel in m: 12.10...12.20

3rd pressure hPa : 270

Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600
Del.quantity cm³/ : 87.0...89.0
1000 s: (84.5...91.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 1235...1250

LOW IDLE

Speed rpm : 275

N19

Rack travel in mm : 4.70...4.90

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,3 p12
Edition : 26.07.91
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 846 954

Injection pump
Pump designation : PE6P110A720RS3225Z
EP type number : 0 411 816 782
Governor
Governor design. : RQV275...1200PA910
Governor no. : 0 421 813 746

Customer-spec. information
Customer : DAF

Engine : HS 200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness : 6.00X1.50X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.70...12.80

Del.quantity cm³/ : 12.9...13.1

100 s: (12.6...13.3)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 7.2...7.4

Del.quantity cm³/ : 1.4...1.9

100 s: (1.1...2.1)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 450

travel mm : 2.90...3.30

3rd speed rpm : 800

travel mm : 4.70...5.10

4th speed rpm : 1200

travel mm : 7.80...8.00

5th speed rpm : 1500

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1235

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 129.0...131.0

1000 : (126.5...133.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:
1st rack travel in: 11.70
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1345...1375
4th rack travel in: 1450
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 78...86

Testing:
Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 275
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION
Speed rpm : 280...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 12.70...12.80

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.90...11.00
2nd pressure hPa : 360
Rack travel in m: 12.10...12.20
3rd pressure hPa : 270
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 87.0...89.0
1000 s: (84.5...91.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.70

N21

Speed rpm : 1240...1250

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.70...4.90

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 12,8 c
Edition : 26.07.91
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 848 820

Injection pump
Pump designation : PE8P120A920/5LS3281
EP type number : 0 411 828 724
Governor
Governor design. : RQV300...1050PA1009
Governor no. : 0 421 813 938

Customer-spec. information
Customer : KHD

Engine : BF8L513LC

1st version kW : 243.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.10...3.20
: (3.05...3.25)
Rack travel in mm : 15.00...19.00
Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 18.6...18.8

100 s: (18.3...19.1)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 300.0
Rack travel in mm : 5.9...6.1

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 2.40...2.80
2nd speed rpm : 450
travel mm : 3.40...4.00
3rd speed rpm : 725
travel mm : 5.30...5.90
4th speed rpm : 1100
travel mm : 9.10...9.30
5th speed rpm : 1175
travel mm : 10.00...10.40

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1070
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 750
Del.quantity : 186.0...188.0
1000 : (183.0...191.0)

Spread cm³ : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 119...127

Testing:
1st rack travel in: 11.70
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 86...94

Testing:
Speed rpm : 100
Minimum rack travel: 9.50
Speed rpm : 300
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION
Speed rpm : 210...260

TORQUE CONTROL
Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.70...12.80
2nd speed rpm : 650
Rack travel in m: 13.00...13.20
3rd speed rpm : 805
Rack travel in m: 12.70...12.90

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 750
Rack travel mm : 12.90...13.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.30...11.50
2nd pressure hPa : 450
Rack travel in m: 12.40...12.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 750
Speed rpm : 650
Del.quantity cm³/ : 186.0...190.0
1000 s: (183.0...193.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 124.0...126.0
1000 s: (121.0...129.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 175.0...195.0
1000 s: (-)

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,6 07
 Edition : 26.07.91
 Replaces : 3.8.90
 Test oil : ISO-4113

Combination no. : 0 401 876 295

Injection pump
 Pump designation : PE6P120A32ORS415-1
 EP type number : 0 411 826 123
 Governor
 Governor design. : RSV250...1000P5A508-
 1
 Governor no. : 0 421 833 194

Customer-spec. information
 Customer : DAF

Engine : DKZ 1160

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 20.6...20.8

100 s: (20.3...21.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 6.7...6.9
 Del.quantity cm3/ : 1.4...2.0
 100 s: (1.1...2.3)
 Spread cm3 : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Aneroid pressure h: 700
 Del.quantity : 206.0...208.0
 1000 : (203.0...211.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 45...53

Testing:
 1st rack travel in: 11.50
 Speed rpm : 1035...1045
 2nd rack travel in: 4.00
 Speed rpm : 1115...1145

3rd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 19...27
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.0
Speed rpm : 250
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 630...690

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 13.50...13.60
2nd speed rpm : 400
Rack travel in m: 13.50...13.70
3rd speed rpm : 300
Rack travel in m: 13.80...14.30

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.20...10.50
2nd pressure hPa : 340
Rack travel in m: 11.80...11.90
3rd pressure hPa : 260
Rack travel in m: 10.60...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 140.0...142.0
1000 s: (137.0...145.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 1035...1045

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 305.0...345.0
1000 s: (301.0...349.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.40...6.60

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,6012
 Edition : 26.07.91
 Replaces : 3.4.87
 Test oil : ISO-4113
 Combination no. : 0 401 876 296
 Injection pump
 Pump designation : PE6P120A320RS415-1
 EP type number : 0 411 826 123
 Governor
 Governor design. : RSV250...1100P5A508-
 2
 Governor no. : 0 421 833 195
 Customer-spec. information
 Customer : DAF
 Engine : DKX 1160

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 067
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 2.80...2.90
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.30 (0.75)

BASIC SETTING

1st speed rpm : 850
 Rack travel in mm : 11.60...11.70
 Del.quantity cm3/ : 18.7...18.9
 100 s: (18.4...19.2)
 Spread cm3 : 0.5
 100 s: (0.9)
 2nd speed rpm : 250.0
 Rack travel in mm : 6.7...6.9
 Del.quantity cm3/ : 1.4...2.0
 100 s: (1.1...2.3)
 Spread cm3 : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Aneroid pressure h: 700
 Del.quantity : 187.0...189.0
 1000 : (184.0...192.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 102...110

Testing:
 1st rack travel in: 10.60
 Speed rpm : 1135...1145
 2nd rack travel in: 4.00
 Speed rpm : 1200...1230

3rd rack travel in: 4.00
Speed rpm : 1270...1300
4th rack travel in: 1430
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.0
Speed rpm : 250
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 600...700

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.60...12.80
2nd speed rpm : 400
Rack travel in m: 12.60...12.80
3rd speed rpm : 300
Rack travel in m: 12.90...13.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.60...11.70

Measurement

Speed 1/min : 600
1st pressure hPa : -
Rack travel in m: 10.30...10.50
2nd pressure hPa : 300
Rack travel in m: 11.30...11.40
3rd pressure hPa : 255
Rack travel in m: 10.80...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 140.0...142.0
1000 s: (137.0...145.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.60
Speed rpm : 1135...1145

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 290.0...330.0
1000 s: (286.0...334.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.40...6.60

Remarks: